

The Mining Journal

Established 1835

Railway & Commercial Gazette

Vol. CCXXXVII No. 6048

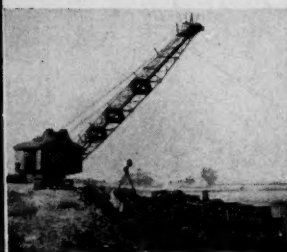
LONDON, JULY 20, 1951

PRICE 6d

RAPIER

Builders of Europe's

LARGEST EXCAVATORS



ALL SIZES FROM $\frac{1}{2}$ TO 11 CU. YD.

WALKING DRAGLINES

RANSOMES & RAPIER, LTD.
IPSWICH ENGLAND

T. BOYD BOYD & CO. LTD.

Passages by Sea & Air

11, Sise Lane, Queen Victoria St.,
Telephone: LONDON, E.C.4 Telegrams: CITY 4433 BOYELBA
also LIVERPOOL - GLASGOW - MANCHESTER - HULL

KNAPP & BATES LTD.

Flotation & Ore Dressing
Equipment

10, GATE ST., KINGSWAY,
LONDON, W.C.2

Cables: Flowsheet Holborn, London Telephone: Chancery 6770



**FOR ALL
MINING
CABLES
AND
ACCESSORIES**

BRITISH INSULATED CALLENDER'S CABLES LIMITED
NORFOLK HOUSE, NORFOLK STREET, LONDON W.C.2.

H
1801 1951
150 YEARS

FIRST IN SERVICE!

FIRST FOR PERFORMANCE

The Handril-Airleg-Holbit Combination

Since the now world-famous and widely used Holman Combination first saw active service it has been responsible for a revolution in drilling technique. It has made one steel per hole the standard of drilling practice everywhere. Capable of drilling deep parallel holes in any direction, it cuts labour costs and increases output phenomenally.

NEW DESIGN FEATURE—greatly improved control handle, which provides easier operation while retaining simple, robust construction.

MAKE SURE you receive prompt information about each new Holman development in this field. Are you on our mailing list?

BROS. LTD.
Holman
CAMBORNE, ENGLAND

HOLBIT.
Tungsten
Carbide Bit.
Cross and
Chisel Types
in various
sizes from 1½
to 2" and in
two grades of
tungsten
carbide.



S.L.9D.
Weight: 42 lb.



S.L.200
Weight: 50 lb.

PHONE: CAMBORNE 2275 (9 LINES)

SUBSIDIARY COMPANIES, BRANCHES AND AGENCIES THROUGHOUT THE WORLD

GRAMS: AIRDRILL, CAMBORNE
HB3

**ORES
METALS
FERRO-ALLOYS**

MANGANESE
CHROME
TUNGSTEN
ANTIMONY
TANTALITE
COLUMBITE
ZINC
LEAD
COPPER



Philipp Brothers, Inc.

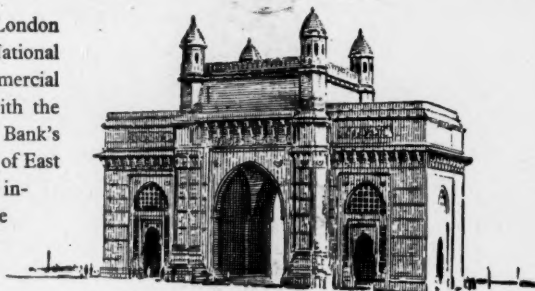
70 PINE STREET • NEW YORK 5, N. Y.

Offices: AMSTERDAM • BUENOS AIRES • CALCUTTA • LA PAZ • MONTREAL • LIMA • TOKYO

London PHIBRO, N. Y.

The Gateway to India

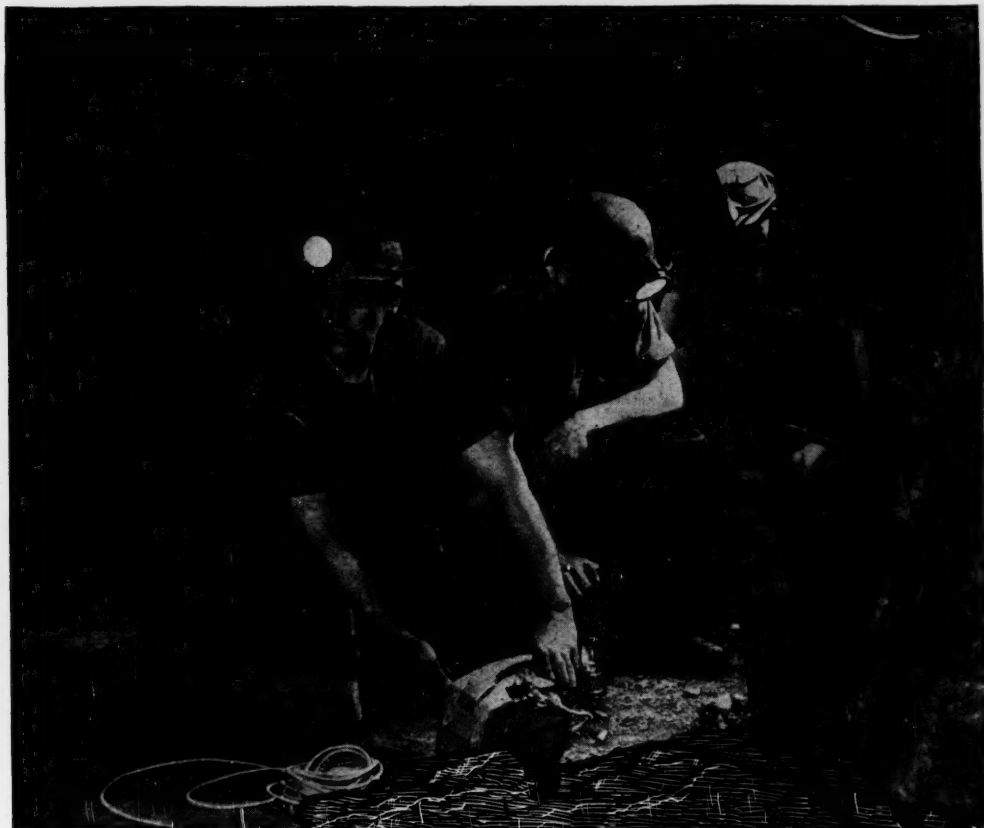
Businessmen need go no further than London to find the key to the gate, for the National Bank of India can provide all commercial banking facilities needed for trade with the subcontinent of India. Moreover, the Bank's specialized knowledge of this area and of East Africa can be of great value to those interested in developing trade with these territories. Enquiries are welcome at Head Office and branches.



A comprehensive banking service is available at the Bank's branches in
INDIA, PAKISTAN, CEYLON, BURMA, KENYA, ZANZIBAR,
UGANDA, TANGANYIKA and ADEN

NATIONAL BANK OF INDIA LIMITED

Head Office: 26 Bishopsgate, London, E.C.2.



NOBEL GLASGOW EXPLOSIVES FOR COALMINING

*The assistance of our
Technical Service Department is
readily available in connection with any problem
in Blasting, Ripping, or Drifting
in coalmines.*

Enquiries and orders should be addressed to the nearest I.C.I. Sales Office or to:—

IMPERIAL CHEMICAL INDUSTRIES LIMITED

Nobel Division, 25 Bothwell Street, Glasgow, C.2





SPACE APPLICATIONS URGENT

Intending exhibitors should apply for space without delay.

Manufacturers who have not received an application form should write at once—

FOR THE LONDON SECTION TO:

The Commercial Relations and Exports Department,
Board of Trade, Lacon House, Theobalds Road, London, W.C.1.
Telephone: CHANCERY 4411.

FOR THE ENGINEERING AND HARDWARE SECTION TO:

Birmingham Chamber of Commerce,
95, New Street, Birmingham, 2.
Telephone: Birmingham MIDLAND 5021.

BRITISH INDUSTRIES FAIR • MAY 5-16, 1952



48, BURLINGTON ROAD, ISLEWORTH, MIDDLESEX

GENERATING SETS.

Two 31 K.V.A. Diesel driven sets with Cummins engines, direct coupled to alternators 400/230/3/50 with switchboards. Mounted on four pneumatic tyred road wheels with drawbar. One 31 K.V.A. as above but 230/1/60.

AIR COMPRESSORS.

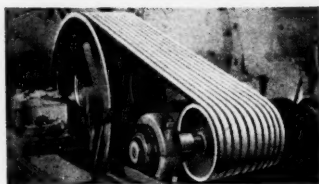
Several Diesel driven sets by Consolidated type PO.2/125 with Ruston 3 VRO engines. Air receiver, fuel tank. On two wheel pneumatic trailer or four solid tyres.

PNEUMATIC TOOLS.

Several C.P.4. High lift sump pumps with delivery hose. Unused. Several Rock drills by Climax, 52 lbs. with 4½ x 1in. chuck. Unused. All sizes reconditioned road breakers, rock drills, woodborers, etc. Air hoses ¾in. in lengths 50/60ft. with or without couplings.

EXCAVATORS.

Ruston Bucyrus type 21 RB driven by Ruston 4 cyl. diesel engine and fitted with Forward Shovel equipment. Now being completely reconditioned.



For all types of
Mining Machinery
specify:—

WIGGLESWORTH
short centre V rope drives
“TEXROPES”

FRANK
WIGGLESWORTH
& CO. LTD
ENGINEERS
SHIPLEY YORKS

Phone: SHIPLEY 53141 Grams: CLUTCH, SHIPLEY

The **D.P.** Rotary Pneumatic

DRILLING MACHINE



TYPE D.P. 21

Other D.P. equipment includes:

Automatic Valves
Ventilating Fans
Pneumatic Picks

ONE of the most remarkable machines introduced to the mining industry. It is used for boring shot-holes in coal and soft stone, and works on the rotary principle. Using compressed air, it is absolutely safe in operation, while its light weight and ease of handling, together with entire absence of recoil and vibration have made it deservedly popular with the men, it being preferred to the percussive type of drill. It is used in conjunction with special drilling bits which enable it to drill in practically any coal. A trial is recommended.

DP/11



dollery and palmer
LIMITED

38 Victoria Street, London, S.W.1

Telephone: ABBey 7166 (2 lines)

Telegrams: Deflection, Sowest, London

GOLD

SMELTING AND REFINING...

Our precious metal smelting and refining service is founded upon more than a century of experience and planned development. A gold refining capacity in excess of 400,000 oz. weekly is supported by methods of sampling and assay that assure the speedy and critically accurate assessment of the precious metal contents of any form of gold-bearing material.

SILVER AND PLATINUM

Our refineries handle also bullion, ores, concentrates and mining by-products containing silver and the platinum metals.

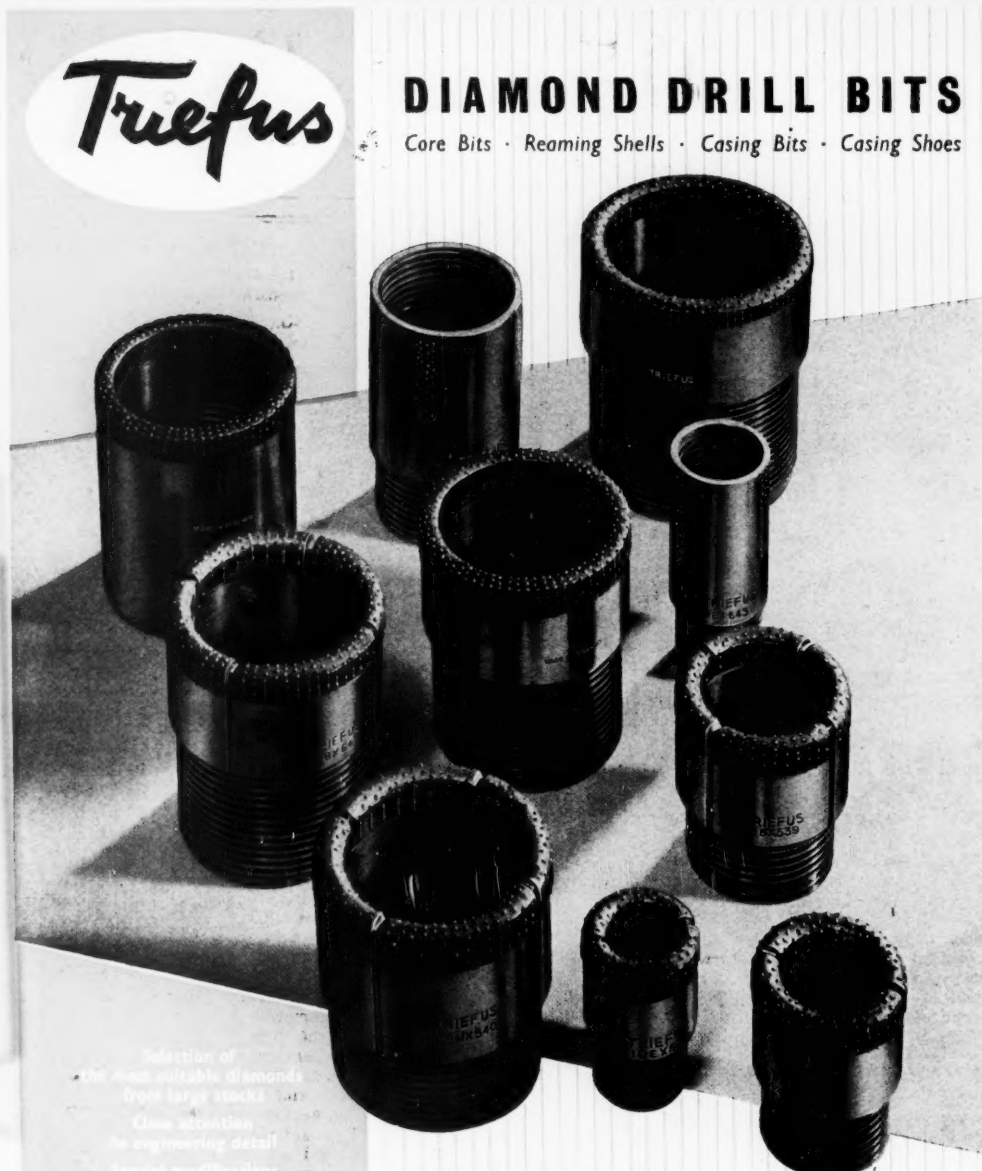


Johnson Matthey

MELTERS AND ASSAYERS TO THE BANK OF ENGLAND

JOHNSON, MATTHEY & COMPANY, LIMITED
HATTON GARDEN · LONDON, E.C.1
GD/169

Canada: Johnson, Matthey & Mollery Limited, 110 Industry Street, Toronto 15, Ontario
Australia: Garrett, Davidson & Matthey (Pty.) Ltd., 824 George Street, Sydney, New South Wales



Triefus

DIAMOND DRILL BITS

Core Bits • Reaming Shells • Casing Bits • Casing Shoes

Selection of
the 4-1/2 inch suitable diamonds
from large stocks
Close attention
to engineering detail
Special modifications
for various conditions
throughout the world
Printed and catalogue on request

INDUSTRIAL DIAMONDS

For all purposes, reaming and
drilling purposes. Specialists
in diamonds.

TRIEFUS & CO., LTD.

OVERSEAS ORDERS TO:

32 Holborn Viaduct, London, E.C.1.

Telephone: Central 9923-4 Telegrams & Cables: Triefus London

U.K. ORDERS TO:

Works: Belsize Lane, London, N.W.3. Telephone: Primrose 3368-9

SYDNEY • TORONTO • WELLINGTON, N.Z. • GEORGETOWN, B.G. • RIO DE JANEIRO

The Mining Journal

Established 1835

Vol. CCXXXVII No. 6048

LONDON, JULY 20, 1951

PRICE 8d

EDITORIAL and ADVERTISING ENQUIRIES TO :

15 GEORGE STREET,
MANSION HOUSE
LONDON, E.C.4

Tel. Nos. : MANSION HOUSE 5511 & 9182

SUBSCRIPTION RATES :

(Including Postage)

INLAND :	10s. ...	3 months.
	18s. ...	6 "
	32s. ...	12 "
ABROAD :	40s. ...	12 "

THIS WEEK'S FEATURES

MATERIALS FOR
UNDERGROUND SUPPORTS - Page 60
A SURVEY OF U.S. LOW-GRADE
MANGANESE DEPOSITS - Page 61

NOTES AND COMMENTS

A Peaceful Settlement

Both parties to a somewhat acrimonious dispute are to be congratulated upon the conclusion of a "cease fire" agreement in the steel industry. In the acerbities which were exchanged between the Minister of Supply on the one hand and the British Iron and Steel Federation on the other there was a real danger that the paramount interests of the nation might be placed in serious jeopardy. The Federation, still smarting under a sense of injustice over the terms of the State's acquisition of privately owned companies, insisted that the Iron and Steel Corporation of Great Britain, over which Mr. Steven Hardie presides, had no legal right to take over the subsidiary companies which have hitherto accepted responsibility for the provision of the raw materials used in iron and steel production. The Corporation's reply was that the supreme responsibility was theirs and that they must exercise control over policy and finance.

Unfortunately the controversy became embittered when the Minister of Supply charged the Federation with using every device "legal and otherwise" to frustrate the Corporation and his appeal to commonsense was robbed of much of its force by his accompanying threat of drastic action.

Happily discussion has produced a compromise. A joint statement issued by the Federation and the Corporation at the week-end reveals that "mutually satisfactory arrangements have been made whereby the Corporation can carry out their responsibilities," and at the same time the executive operation of the purchase and distribution of foreign ore and scrap will be carried out as heretofore by the machinery developed by the Federation. Meanwhile it is understood that discussions are continuing on the various problems ensuing from the take over and the long term organization which must eventually be set up if the Iron and Steel Act remains on the Statute Book.

S. Wales Anthracite Project to Cost £7,500,000

The N.C.B. has just approved a project for a new anthracite colliery costing £7,500,000 in the Gwendraeth Valley in the Swansea area. It will be located at Cynheidre, about five miles north of Llanelly, and is designed for the production of 1,000,000 tons of coal p.a. The importance of this project lies in the fact that it will

increase supplies of anthracite both for domestic needs (which cannot at present be fully met) and for shipments abroad, especially to Canada, the Eastern U.S.A., and to the Continent. When in full production, the colliery should provide employment for about 3,450 men; this is 600 more than the total number now working at six neighbouring collieries, most of which are approaching exhaustion. The project provides therefore security for all the men at those collieries who would otherwise ultimately become unemployed, and the question of providing housing for the additional men is to be discussed with the local authorities concerned.

Plans have been in course of preparation for a considerable time, but before a decision to sink new pits and develop a colliery could be made, it was necessary to obtain first of all evidence of the incidence of the seams. This was done by means of a bore-hole at Sylen and, on May 25, it was announced that, after boring to 2,550 ft. at this point, the Big Vein, one of the best anthracite seams in the South Wales coalfield, was struck. This, and neighbouring seams, are continuous with those now worked nearer the outcrop to the west and to the north of Cynheidre. Other bore-holes have to be put down to complete the planning of the underground lay-out of the colliery, but from a geological point of view, sufficient is now known about reserves to justify the scheme.

The N.C.B. states that this anthracite field is considerably disturbed geologically; mining conditions are far from favourable and production costs in the South Wales anthracite field are the highest in the country. Yet in spite of the heavy expenditure involved, anthracite will be won at less cost, quality for quality, than from most of the neighbouring pits.

Workable reserves in seven seams of the best type of anthracite are estimated at more than 100,000,000 tons of which 17,000,000 lie in the Big Vein alone.

Production is expected to begin in 1956 and full output will be reached by 1962. One shaft will be 24 ft. in diameter and the other 20 ft., will be sunk to depths of approximately 2,280 ft. and 2,080 ft. Horizon mining will be practised as at Nantgarw, Llanharan and other development projects in South Wales, the seven seams being worked from four horizons at vertical intervals of 200 ft. Wherever practicable, the system of

mining will be "advancing longwall" served by locomotive haulage and mine-cars. The colliery is being planned as an all-electric undertaking, power being supplied by the South Wales Electricity Board.

Developing India's Aluminium Industry

When the development of the aluminium industry in India was considered at a meeting by the Planning Commission of India with representatives of the industry, it was stated that production should be stepped up to meet the full domestic demand. During the five-year period ending 1955-56, this demand might be met by the expansion of the existing units to 5,000 tons each per annum, and by the establishment of a new unit of 15,000 tons in the Hirakud area.

Production capacity for aluminium in India is, according to a correspondent, at present about 4,000 tons per annum, as against an estimated demand of about 16,000 tons, of which 10,000 tons are for utensils, 2,500 tons for cables, 700 tons for aluminium foils, 300 tons for aluminium powder, 100 tons for castings, 2,000 tons for diverse industrial needs, and a small quantity for defence requirements.

Production capacity for purified alumina is at present 14,000 tons per annum, which yields only about 7,000 tons of aluminium. The capital investment of the two units engaged in the production of virgin aluminium in India is estimated at Rs. 29,000,000. Production of aluminium ingots in 1949 was 3,490 tons and 3,596 tons in the first eleven months of 1950.

The representatives of manufacturers emphasized that future plans for the development of the aluminium industry should be based primarily on meeting the requirements of the domestic market because it would be difficult to compete with aluminium from Canada, the U.S. and other advanced countries where costs of production were considerably lower. They also pointed out that the expansion of existing units should be given preference over the establishment of new units and that manufacturers would have to be protected and subsidized for a considerable time.

The question of establishing a large central aluminium plant for providing cheap alumina to the virgin metal manufacturers was also discussed and other points considered were the procurement of essential materials, such as cryolite, and the possibilities of developing exports of aluminium ware.

Sillimanite in Assam

For the exploitation of the massive sillimanite deposits of the Khasi Hills Plateau in the State of Nongstoin, Assam, North-East India, a new company, Assam Sillimanite Ltd. has been registered under the managing agency of Steel Brothers & Co., Ltd., Calcutta, a correspondent reports.

The area has been surveyed and reported on by the Geological Survey of India which estimates that there is available 251,600 tons in 21 deposits, of which the largest single one comprises 84,000 tons. The majority of the deposits consist mainly of massive sillimanite with a little corundum, the presence of which is stated to improve performance as a refractory. Impurities are not abundant and comprise mainly rutile, very little biotite and iron ore.

Sillimanite has many valuable properties which render it suitable for use as a refractory material. These include strength and toughness, with resistance to mechanical shock; high melting point; low expansion co-efficient; low electrical conductivity; freedom from volume changes; neutral reaction and resistivity to corrosive slags and to oxidizing and reducing conditions. It is stable at all temperatures up to about 1,545°C, at which point it dis-

sociates into mullite ($3 \text{ Al}_2\text{O}_3 \cdot 2 \text{ SiO}_2$) and a silica-rich liquid. The amount of expansion is about 0.6 per cent. On being heated it expands uniformly from ordinary temperatures up to 1,500°C. At about 1,545°C, there is a further sudden expansion of about 0.6 per cent.

Khasi sillimanite is the metamorphic produce of highly aluminous interbedded sediments. Very pure clays have resulted in sillimanite-quartz-schist and rather impure clays in sillimanite-biotite-cordierite-quartz rock. A typical analysis of Khasi sillimanite, according to the Geological Survey of India, is as follows: — SiO_2 —35.70 per cent; TiO_2 —0.18 per cent; Al_2O_3 —62.28 per cent; Fe_2O_3 —1.74 per cent; MgO —0.13 per cent; CaO —traces. When heated, a little glassy material due to small quantities of accessory minerals, such as ilmenite and rutile, is exuded. The manufacturers of refractories do not find this to be any serious disadvantage. It is not necessary to calcine Khasi sillimanite. On dissociation into mullite and to (probably) cristobalite, there is an insignificant increase in volume insufficient to give rise to serious trouble. The change takes place throughout the whole crystal.

Khasi sillimanite occurs mainly in boulders, lying on or just under the surface of the soil, usually in jungle. Some of these boulders are huge and weigh up to 100 tons. It is, therefore, necessary to drill, blast and crush. Experiments have been made with furnace blocks sawn from boulders, but it is too early to say with what degree of success. The necessity to avoid blocks having any serious fractures suggests that the available quantity of suitable material is likely to be considerably less than that available for crushing.

Are World's Oceans "Liquid Mines"?

The world's oceans are in fact "liquid mines," according to the American Iron and Steel Institute, and apart from abundant deposits of iron on the floors of oceans, it is also present in sea water in organic form. Other minerals present in oceans and associated with marine life include cobalt, copper, nickel, boron, molybdenum and manganese. The iron bearing mineral is called glauconite, a close chemical relative of the taconites found in the sedimentary rock deposits of the Lake Superior region of the United States. Glauconite is a greenish, granular mineral, deposited slowly near the mudline along seacoasts at depths of from 600 to 5,000 ft. away from large or swiftly moving rivers. The mineral, containing about 23 per cent iron, is formed when shell fish, following death, become filled with fine mud which contains iron leached from rocks on the land.

Iron is also present in sea water in organic form, that is, in a form produced by animal or plant action. Originally in inorganic form derived from the leaching of rocks, it is removed from solution by plankton, primitive, usually minute, marine or fresh water plants and animals, often found in colonies. In addition, some sea creatures concentrate alloying metals used in steel-making. That concentration is so low, however, that it is improbable that commercial use will be made of any of them in the foreseeable future. Lobsters, for example, concentrate cobalt; oysters concentrate copper; scallops concentrate nickel; sea slugs and a sea animal called an ascidian concentrate vanadium, while mussels and plankton concentrate manganese. Marine plants also concentrate steelmaking elements such as boron and molybdenum.

Manganese has been found in thick layers on the ocean floor but its origin and mode of formation are still unsolved. More frequently, manganese is found in rough, round nodules or balls about the size of walnuts.

India and Ceylon

(From Our Own Correspondent)

Colombo, July 3

The Government of India has under consideration a proposal to establish a plant for the beneficiation of low-grade manganese ore—a good dollar earner. The proposal includes a plant for the manufacture of ferro-manganese in electric furnaces.

Madhya Pradesh (Central Provinces) being one of the largest producers in India, it has been suggested that the proposed plant should be erected in this State.

In India, manganese ore is mostly found in Madhya Pradesh, Orissa, Bihar and Madras. The ore found in Madhya Pradesh is considered to be of the best quality—said to run 45 per cent Mn. Manganese ore deposits have also been discovered in the Kalahandi district of Orissa as a result of investigations recently carried out by the Geological Survey of India. Traces of the ore were first revealed by a preliminary survey in 1948, and detailed investigation carried out this year has revealed a large number of deposits scattered over the locality.

It is not yet known how deep the mineral extends, but it is believed that the deposits are not entirely superficial. It is stated that further prospecting is needed before a fully satisfactory estimation of the reserves can be made.

Mr. S. Krishnaswami, Geologist, Geological Survey of India, after re-examining certain occurrences of manganese ore in the Visakhapatnam District, Madras State, has submitted a report. The district is already known as a manganese bearing area and is being worked. The manganese ore bodies in this area are usually highly irregular, both in shape and size, with no recognizable dip or strike, except in Garbham where well-bedded large bodies with measurable dip and strike are found. The Kodur group of occurrences is easily one of the largest in Vizagapatam District.

The further details on India's manganese output and export, and on the proposed erection of a manganese smelter in Orissa by a U.S. firm, see the despatch from our own correspondent on "Manganese in India," published on p. 476 of *The Mining Journal*, for May 18, 1951.

CEYLON'S THORIUM OUTPUT FOR BRITAIN

Ceylon's entire output of thorium, the radio-active metal used in atomic energy production, will go to Britain. Plant for processing the thorium-bearing monazite sands arrived from the United Kingdom some time ago and is now being installed in Katukurunda, 30 miles south of Colombo on the west coast of the island, where monazite sands are found in abundance. The factory—the first of its kind in the Dominion—is nearing completion and is expected to go into production by the end of this month.

Experiments have shown that the Katukurunda factory should be one of the most profitable ventures undertaken by Ceylon's Ministry of Industries and Industrial Research. The plant for processing the monazite has been loaned by Britain, and in return, Ceylon will sell to Britain all her thorium for which there is a big demand.

Dr. D. N. Wadia, former Ceylon Government Mineralogist, in the course of a report on rare earth minerals in Ceylon, pointed out that comparative tests had revealed that Ceylon monazite has the richest thorium content in the world.

Monazite is invariably found in the black sands of the west coast of Ceylon—the beach at Induruwa, near Katukurunda, containing the most concentrated deposits. Another deposit has been discovered at Kodremalai, 40 miles south of Mannar. Other deposits have been found at the mouths of the Ginganga and Kaluganga rivers and at Marawila and Welaboda, all on the west coast of the island.

Brazilian Oil Situation

(From Our Own Correspondent)

Teresopolis, July 10

While in France recently, General Barreto, President of the National Petroleum Council, discussed financial arrangements with French bankers for the installation of a second 45,000 barrels refinery for the Brazilian Government. Their proposals, which are said to be satisfactory, are now under consideration by the President of the Republic.

The National Security Council is studying another project, submitted by a group of Brazilian capitalists, to instal and exploit a 30,000 barrels refinery at Niteroy, in the State of Rio. The company would consist entirely of Brazilian shareholders, with an initial capital of 100,000,000 cruzeiros (£2,000,000), but American interests would advance \$U.S.25,000,000 towards the cost of the plant, and Socony Vacuum would guarantee technical assistance during twenty years.

These two refineries, one already operating and three others, for which contracts have been signed (see *The Mining Journal* for February 2, 1951), would bring Brazil's total refining capacity to 155,000 barrels p.d. In addition, three privately-owned skimming plants, without cracking or polymerization operations, in Sao Paulo and Rio Grande do Sul, have a total capacity of 2,000 barrels p.d. Local consumption is expected to reach 200,000 barrels daily in 1954.

The first consignment of materials for the state-owned refinery at Cubatão has been shipped from Le Havre, and the U.S. Government has agreed to facilitate exports of prospecting and refining equipment.

With the exception of the Mataripe plant, which is processing oil from the Bahia wells, all these refineries will treat imported crude until local supplies become available.

NEW OIL DEPOSITS FOUND

Oil deposits discovered to date in the Reconcavo district of Bahia are estimated at 500,000,000 barrels with a potential output of 12,000 barrels daily. A new oil-field has recently been discovered in the municipality of Esplanada, about 80 miles north-east of Salvador, the capital of Bahia. Petroleum was found on the fourth experimental drilling, at a depth of 100 metres. Drilling is proceeding in the Amazon Basin, at a depth of 4,500 metres, and is about to start at Carolina, in Maranhão, where it has been necessary to build a road and airport.

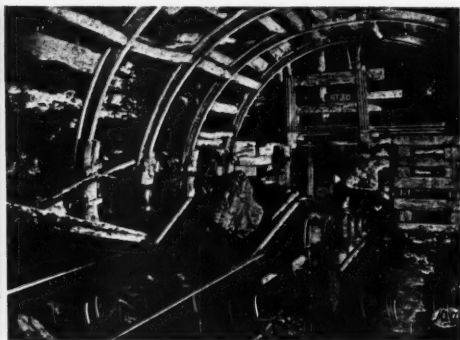
Test drilling was begun in 1949 in the valley of the River Vaza Barris, near the Sergipe border, within the oil-bearing zone recently proclaimed to be a federal reserve. This reserve embraces the area between the true meridians of 37° 30' and 39°. It is limited in the north by the right bank of the San Francisco River, and in the south by an arc of 60 kilometres radius, extending from its intersection in the west with the 39th meridian to the point at which it meets the coastline in the east, and along this line to the true meridian of 37° 30'. Geological and seismographic investigations are being carried out in the states of Para, Alagoas, Sergipe and Parana.

Experiments are about to commence in the Union Oil Co.'s pilot-retort in California on 200 tons of bituminous schist from the Taubaté deposits in the Paraíba Valley (see *The Mining Journal* for November 26, 1949), and the Foster Wheeler Co. is preparing plans for a 10,000 barrel plant to distil oil from these schists. It will be installed mid-way between Rio and Sao Paulo and be administered by the National Petroleum Council.

Materials for Underground Supports

The use of timber for propping and shoring goes back to the earliest days of mining. At the beginning of the present century, timber supports were used almost exclusively in British collieries. Only some 20 per cent of the country's requirements was locally supplied, the balance being obtained from Scandinavia, Russia, and from other overseas countries. Twice during the past four decades, timber imports have been drastically affected by shipping shortages resulting from major wars. On each occasion, a serious crisis was averted by increased utilization of home-grown timber, together with the extensive use of alternative materials.

It was during the 1914-18 war that experiments were first made with steel supports at the coal face and in roadways. In the majority of cases steel face supports proved so unpopular with the miners that their use was discontinued immediately timber was again available in sufficient quantities. Miners have confidence in timber supports because the creaking of timber under load is regarded as a warning of excessive roof weight. The introduction of materials which do not "talk" met with



Use of timber and steel in a coal mine.

strong opposition in many mines and was only accomplished by appealing to the miners for co-operation on grounds of national urgency. This traditional preference for timber still persists.

During the recent war, it again became necessary to consider all materials that could, in some measure, be substituted for timber. This second crisis greatly accelerated the change-over from timber to steel at the coal face, particularly during 1940/41, when the shortage was so acute that the use of steel face supports was essential to the maintenance of coal production. In one coalfield producing 30,000,000 to 35,000,000 tons of coal annually, the proportion of coal face supported on steel props increased from 30 to 80 per cent over a period of 18 months, and many mines were completely converted from timber to steel. It is doubtful, however, whether the proportions of timber and steel in use at the face would have varied very much during the 12-year period in question but for the war-time timber famine.

The present costs of timber and steel have increased by 300 per cent and 230 per cent, respectively, over the 1938 rates. Comparison of the economic advantages of the two materials cannot be based purely on initial costs, for there are many other important factors to be considered. Whereas steel props of the same length and section vary only slightly in load-carrying capacity, the strength of timber is influenced by variations in

moisture content, straightness, knots and other inherent factors. These variations can, to some extent, be overcome by the efficient grading and selection of timber supports. Broadly speaking, steel props are from 2½ to 3 times stronger than timber props, where the sections conform to normal standards in relation to the length. Under certain strata conditions, with a strong roof and medium floor, steel is frequently an ideal support, but where variations in the relative strengths of roof and floor beds occur, conditions are sometimes encountered where tapered timber props are preferable to steel. Where frequent variations in height are encountered, it is invariably necessary to revert to the use of timber.

The cost of steel supports is between 6 and 7 times greater than that of timber used for the same purpose, so that it is essential for the life of steel supports to be increased in similar proportion for economic use. This necessitates greater care on the part of the miners and also more supervision to ensure minimum losses. Under certain conditions the complete recovery of supports becomes extremely difficult and heavy losses may be unavoidable. On the other hand, it is standard practice at many mines, when timber is plentiful, to leave the timber standing in the wastes, and only to recover from the area enclosed by the packs. Many colliery officials consider that the increased cost for timber consumed by the adoption of this system (for seams not subject to spontaneous heating), is more than covered by the elimination of labour costs incurred where the supports are withdrawn.

For roadway supports steel, mainly in the form of arches, has undoubtedly displaced timber where roadways have to be maintained through the worked out area, but timber will continue to be used in the roadways of bord and pillar workings and in some of the new mechanization projects in which headings are driven in the solid coal and the supports are not subjected to heavy loads.

USE OF LIGHT ALLOYS

A disadvantage of steel is its relatively heavy weight. Steel props and bars are from three to four times the weight of timber necessary for the same duty, the weight ratio varying according to the seasoned condition of the timber. Heavy support material introduces considerable handling difficulties underground, a problem which has directed attention to the possibilities of light alloys. Light alloys with an aluminium base have been investigated by the National Coal Board, in co-operation with several manufacturers, the main object being to find suitable alloys and sections for overhead supports such as roof bars. Though light alloy bars are being used for special duty their present cost is prohibitive.

Some progress has also been made in the use of hydraulic props, several thousands of which have been installed. In the early stages, minor difficulties in the use of these props were encountered, but these have been largely overcome. Here again, the cost factor is unfavourable, though the easier setting and withdrawal afforded by hydraulic operation indicate that this prop might be a reasonably economic proposition under certain circumstances. However, unless it can be further simplified and its costs considerably reduced, the hydraulic prop is unlikely to make much headway.

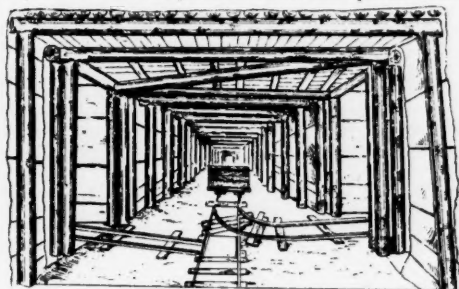
An interesting development is the growing popularity of the composite form of chock. This chock has a steel base incorporating a release device so that the total height of the steel structure is approximately half to two-thirds the height of the seam. The remainder of the

chock height required is constructed of the usual square type timbers which are finally pinned to the roof. The reason for using the steel base is that it lends itself to easier recovery after release from load, than is the case where the timber members form the complete chock height from floor to roof.

Despite the advent of alternative materials timber remains as essential as ever to the mining industry. Due to the drastic change in supplies resulting from the rearmament programme, it now appears to be emerging in the unaccustomed role of a relatively plentiful material. Whereas steel and other alternative materials are becoming progressively more scarce, supplies of both home-grown and imported timber continue to improve. This changed situation is likely to accelerate the reversal to timber supports which has lately been taking place.

During the war British forests were largely denuded to keep the pits supplied. Now plantations that were too young to be cut down during the wasteful processes of the emergency are ready for thinning, while considerable acreages have been planted during recent years.

Formerly, imported timber used to be considered superior in every way for use as mine supports. There may have been some justification for this opinion in the



Roof support at "Way Ends" by means of a diagonal bar.

past, particularly during the critical periods when it became necessary for British timbers to be felled at all seasons and transported to collieries for immediate use without seasoning, removal of bark or grading. Much research has since been devoted to home-grown timber for mining use, and the Forestry Commission has been able to show pit props fully up to the standard of the best imported products. There is little doubt that home-grown timber, properly selected, graded, peeled, cleaned and seasoned, is suitable for general support duty.

Prop-load test figures obtained at the Forest Products Research Laboratory of the D.S.I.R. show the average strength of various home-grown and imported timbers. Recent tests on timbers with a 1 in 12 ratio of least diameter to length indicate that home-grown props of good quality, from normal thinnings, compare favourably in strength with props from the Baltic or elsewhere. Studies have also been made of the effect of moisture content on the strength of timber, and it has been found that fully seasoned timber is 25 per cent stronger and little more than half the weight of green timber.

Improvement in the selection and preparation of timber, based on scientific experiment and research, is enabling home producers to meet the exacting requirements of the collieries. Over the period 1942-47, the mines consumed an average of 601,680 standards of home-grown timber annually, as compared with 113,170 standards of imported timber. Though dependence on imported supplies can never be eliminated, the expansion of home production provides a valuable safeguard against disorganization of supplies in any future crisis.

Survey of U.S. Low-grade Manganese Deposits

Deposits of low-grade manganese, amounting to millions of tons, are available in various locations in the United States. According to Walter E. Lewis, a U.S. Bureau of Mines Minerals Survey official, the Cuyuna Range in Minnesota, with about 500,000,000 tons of low-grade iron material containing from 10,000,000 to 25,000,000 tons of metallic manganese, is one of America's largest sources of this important ingredient of steel-making. Other significant deposits of low-grade manganese in the U.S. include the Chamberlain District, South Dakota, with 77,000,000 tons of nodules with an average grade of 15.5 per cent manganese contained in two billion tons of shale; the Aroostock County District, Maine, with 200,000,000 to 300,000,000 tons of ore averaging 4 per cent in grade containing 10,000,000 tons of metallic manganese and the Artillery Peak District, Arizona, with 195,000,000 tons of ore averaging 4 per cent in grade containing about 7,500,000 tons of metallic manganese.

DEVELOPING CUYUNA RANGE DEPOSITS

Each ton of steel requires about 13 lb. of manganese, and about 90 per cent of the manganese used in making steel goes into ferro-manganese. As a potential source of ferrograde manganese, the low-grade deposits on the Cuyuna Range (the average manganese content of the ore ranges from 2 to 10 per cent) compare favourably with those of the other known, more important, manganese deposits in the U.S. Moreover, technological problems in developing the enormous manganese reserves in the Cuyuna Range are no more difficult and in some cases easier of solution than those arising in developing other large deposits in the United States, according to Mr. Lewis, who pointed out that in order to obtain a ferrograde manganese product carrying 48 per cent or more manganese, a chemical leaching method would have to be used on Cuyuna Range ore. Beneficiation, metallurgy and chemical leaching problems to be overcome in using Cuyuna materials are no more complex than those encountered at other domestic sites, he added.

U.S. DEPENDENT ON MANGANESE IMPORTS

Of the total manganese used by the steel industry, only about 10 per cent is furnished by domestic U.S. producers. The remaining 90 per cent is imported from India, the Gold Coast, South Africa, and Brazil, with smaller quantities from Mexico, Chile and the Philippines. Soviet Russia, probably the world's largest producer and formerly a principal U.S.A. source, now ships little manganese to the U.S.

During World War II, Mr. Lewis said, the enemy sunk one out of every three manganese-laden ships bound for the U.S. until the middle of 1943. Subsequently, the Government and private industry agreed that steps should be taken to develop domestic supplies of manganese ore under a strategic programme. Manganese was one of the seven metals on the original Army-Navy Munitions' Board list of strategic and critical minerals needed for the stockpile.

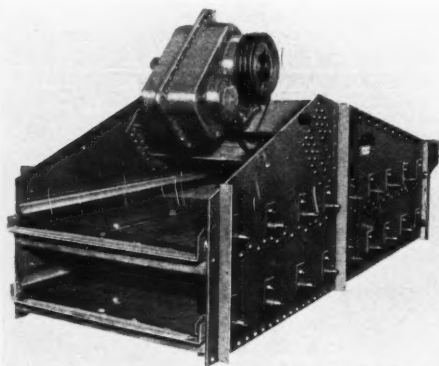
In addition to those listed above, major manganese deposits in the U.S. also are found in the Gaffney Kings Mountains of North and South Carolina; the Butte District, Montana; Leadville District, Colorado; Three Kids District, Nevada; Batesville District, Arkansas; Pioche District, Nevada, and the Philipsburg District, Montana.

British-made Allis-Chalmers Low-Head Screens

The manufacture and sale of Allis-Chalmers Low-Head screens has been inaugurated in this country by the Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin, U.S.A., by its London Office, 728, Salisbury House, London Wall, London, E.C.2. The screens will be built by MacKay Industrial Equipment Ltd., Feltham, Middlesex. Mr. John E. Dunn, engineer-in-charge of the screen section of the general machinery division of the Allis-Chalmers Mfg. Co., is in England for a few weeks in connection with the introduction of the screen to the British market. All specifications and engineering were completed at the West Allis works and sent to this country. A test of the Low-Head screen will be held this month by the National Coal Board and it is anticipated that the introduction of this horizontal screen will improve, and speed up, the processing of coal in the United Kingdom. Moreover, the company will also enter other sterling areas with British-made screens, particularly India and British Africa.

Of simple construction, the Allis-Chalmers Low-Head Screen consists of two units—the screen body and the vibrating mechanism. The screen body, comprising side plates, support frame and mechanism support, is constructed of high tensile strength alloy steel (80,000 to 90,000 lb. sq. in.). The side plates are connected to each other by the screen surface support frame and are additionally reinforced on the inside by longitudinal angles of support frame and at the top by a heavy "H" beam supporting the vibrating mechanism. The feed end is equipped with vertical back plate to prevent spillage of material and also to act as tie for ends of side plates. On multiple deck screens, plates are sectionalized to permit easy access to screen surfaces.

Screen surface support frames have single or double transverse crown, depending on screen width and mesh and gauge of surface used. The support frame consists of two longitudinal angles with welded cross angles that form a support for the surface. Longitudinal bars (3, 4, 5 or 7) are welded to cross angles. The entire frame is then



Double Deck Low-Head Vibrating Screen with Sta-Kleen Lower Deck, made by the Allis-Chalmers Mfg. Co. for the Koppers Coal Co., Kimball, W. Va., U.S.A.

stress-relieved and planed along adjacent sides to exact width. Longitudinal bars are planed to form single or double crown.

For fine mesh cloth and wide screens using medium to coarse mesh, support frames are furnished with double transverse crown with centre hold-down strip. The double crown deck has two advantages: (1.) It reduces the height of crown, assuring a more even depth of bed than is obtained with single-crown decks, and (2.) It prevents whipping of screen surface, thereby increasing surface life.

Longitudinal support bars are covered with self-clamping rubber buffer strips to act as cushion between screen surface and support frame thus materially increasing surface life. For hot materials over 200°F., metal or asbestos strips are supplied.

When required, extra-heavy duty screen deck support frames are made of "I" beam and channel construction with flat surface arranged for bolting screen surface to frame. Side plates above screen surface are protected by plate liners, replacing standard tension clamping bars.

Forty feet of cable, suspension springs, spring guards and fittings are furnished for suspending screen from the overhead structure. This assembly practically eliminates transmission of vibration.

The mechanism on Allis-Chalmers Low-Head screens utilizes a set of accurately calibrated counterweights designed to produce a straight line vibratory motion at 45° with the horizontal, imparting both a vertical lifting motion and a horizontal conveying motion to the screen. The counterweights are mounted on two parallel shafts which are geared to operate together. Rotation of the opposed counterweights produces the desired vibration. The shafts are ground to close tolerances and are mounted in four large anti-friction roller bearings which fit in bores of the steel housing.

The vibrating assembly is enclosed and sealed against dust and moisture. After the mechanism is filled with oil to the proper level, only periodic inspection of unit is required. The mechanism is continuously splash-lubricated by passage of counter-weights through oil.

The vibrating mechanism is driven by a deep groove Texrope sheave which is normally located on the right hand side of the screen. Low-Head screens can be equipped with twin mechanisms, if required. They are used for large screens where desired amplitude cannot be obtained with a single mechanism.

HORIZONTAL DECK PRINCIPLE

Experience under different operating conditions has shown that the horizontal deck principle of Low-Head screen construction plus the straight line 45° motion of the vibrating mechanism makes this screen more efficient for rinsing and draining operations than the inclined type of screen. Vibration imparts a sharper impact to the material, highly essential in removing adhering fines and slimes.

For wet screening application the Low-Head screen can be operated with the screen surface sloping slightly upward if desired. This affords more efficient draining than can be accomplished on conventional inclined type screens.

Low-Head screens, equipped with water sprays, are highly adaptable for rinsing of material to remove clay, dirt and other material adhering to the product which readily dissolves in water. The Low-Head screen is not recommended for removing hard clay balls or any other material which does not disintegrate easily. Where the product is of such nature that severe scrubbing action is required, the manufacturers recommend other Allis-Chalmers washing equipment, such as blade mills, various types of scrubbers, washers, etc.

Wherever the standard side tension Low-Head screen is applied to wet screening, the use of auxiliary drip strips are recommended. These strips are arranged under the screen surface, attached to the support frame, and prevent water from travelling down the underside of

the screen surface, along the longitudinal support angles to be discharged with the oversize.

More recently, field tests have also shown that Low-Head screens equipped with the new end-tension deck are establishing even higher standards of efficiency in the dewatering of coal, ores and other materials. This new end-tension deck, with its principle of longitudinally crowned screen surfaces and elimination of longitudinal support bars, is expected to supplant more and more of the wet screening and dewatering operations now handled by conventional screens.

The application of this principle is stated to result in flat transverse sections which assure an even bed depth of material—essential in obtaining highest efficiencies in rinsing and dewatering.

A characteristic of transverse single and double crown decks (the standard deck for Low-Head screens and all other horizontal vibrating screens we know of) is uneven bed thickness—inherent where any side tensioning screen surface arrangement is used. This type of deck is entirely satisfactory for coarse screening.

However, where absolute highest efficiencies are required, the use of an end-tension deck for either medium or fine dry screening or rinsing and dewatering, is recommended. Four primary advantages it offers are: (1) Greater capacity—since it permits using screen surfaces with elongated openings running parallel to length of screen; (2) Maximum utilization of full screening area—because there are no longitudinal supports to impair screening efficiency; (3) Four-way screen surface life—sections can be turned end-for-end and upside down, increasing surface life, and (4) Each individual support for screen surface acts as a drip strip.

USE OF BOTTOM PLATES

Low-Head screens can be equipped with bottom plates for applications where it is necessary to convey the undersize material to the discharge end of the screen. However, the use of bottom plates on vibrating screens requires larger mechanism to compensate for the additional weight of the bottom plate. Also, a bottom plate is subject to accelerated wear, which might lead to eventual whipping and failure. Therefore, when laying out a new, or revamping an old, plant, the company strongly recommends to give careful consideration to the practicability of eliminating bottom plates. In many instances, greater economies are effected by other methods. In place of a single deck screen with bottom plate or a double deck screen with bottom plate it recommends a double or triple deck screen equipped with a blank plate on the bottom deck to serve as a carrying pan. This blank plate can have edges bent up to engage in the clamping device in the same manner as the screen surface.

REVIEWS

Altstoffe und Abfälle.—By Philip Haas. Berlin, Markwart Verlag. Obtainable from Georg Ahterberg, Berlin—Lichterfelde. Pp. 96. Price DM.3.60.

Based on his long experience in the waste materials department of the German State Railways, the author has succeeded in giving a comprehensive survey of the economic utilization of various waste materials, e.g., scrap, non-ferrous metals, alloys; slag; timber; waste oils and paper. Since the utilization of by-products and waste materials had become a fine art many years before a world war, raw material shortages and soaring commodity prices compelled British manufacturers to pay attention to this matter, readers may be able to glean many valuable suggestions from Mr. Haas's book.

Report of the Tin Research Institute, 1950

This illustrated report states that the past year has been marked by the completion of the building programme at Greenford, Middlesex, and by a return to normal working conditions. Both the technical service and general development work have proceeded normally during the year and good progress has been made with a number of research projects.

Compressed Air Terms and Standards

The British Compressed Air Society, Secretaries: Peat, Marwick, Mitchell & Co., 94-98, Petty France, London, S.W.1, has just published a third, enlarged and revised edition of their booklet, "Compressed Air Terms and Standards," first published in 1932. It includes further British Standard Specifications and over thirty pages of tables and graphs relating to compressed air and its equipment.

The main text covers definitions of compressed air, types of compressors, details of the calculations required to determine the sizes of air receivers, maintenance, lubrication and storage of portable air compressors, installation and maintenance of stationary compressors, definitions of testing, maintenance and lubrication of pneumatic tools.

Copies may be obtained from the Society at the above address, price 10s. 6d., post free.

The Oil and Gas Journal Golden Anniversary Number.

—Petroleum Publishing Co., Tulsa, Oklahoma. Pp. 484.

Fifty years of Oil in the South-west is the *leitmotiv* of an attractively produced supplement to the May 31, 1951, issue of our U.S. contemporary the *Oil and Gas Journal*, in which this faithful guide and fount of information for oilmen the world over glances back on the story of the last fifty years. Introducing the volume, the company's President, Mr. P. C. Lauinger, points out that "one cannot help but be impressed with the tremendous odds which the pioneers overcame . . . The old timers had to make an industry out of nothing but their pluck and ingenuity." These words provide food for thought at a time when risk capital and the spirit of enterprise are increasingly being fettered in many quarters. Among the interesting contents we would single out The Journal Story (illustrated with many pictures of historical interest), The Journal-Log of South-western Oil; and South-west U.S.A., Birthplace of Rotary Drilling.

Practical Coal-Mining for Miners.—Edited by E. Mason. Second Edition, 1951, London: Virtue & Co., Ltd., 24, Holborn, London, E.C.1. Two vols. Pp. xv.—345 + xii—787. Figs. 870 and plates 14. 7½ x 10 in. Price £3 10s. (Post free in the U.K.)

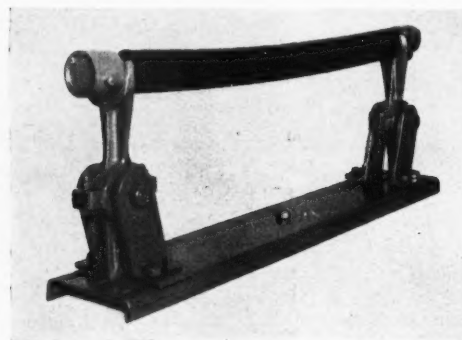
Although there is a large amount of literature devoted to the various operations and trades to be found within the coal industry, the editor avers that the miner has hitherto not had a comprehensive general book enabling him to understand his industry as a whole. He has, therefore, set out to fill this gap and, assisted by a panel of contributors, drawn from every division of the nationalized industry, he has accomplished his difficult task well. The work, which will be of great use not only to miners, but also to officials connected with this vast industry, to teachers and students, comprises, in its first volume, *inter alia*, chapters on The Story of Coal; The British Coalfields; Boring; Shaft Sinking and Maintenance; Methods of Mining; Mine Dusts; Rescue and Recovery. The second volume has chapters on Steam Power; Electricity; Winding and Winding Engines; Transport and Communications; Power Loading Machinery; Pumping; The Uses of Coal; Colliery Management, and Planning. The numerous illustrations add to the usefulness of these two volumes.

Machinery & Equipment

The Sutcliffe Hammock Idler

The photograph below shows the hammock idler (Provisional Patent No. 24796/49) manufactured by Richard Sutcliffe Ltd., Universal Works, Horbury, Wakefield, Yorkshire, which is a type of belt support developed to improve the life of conveyor belting and designed to produce a unit which has a greater efficiency than the standard three or five pulley type of idlers. It may be used anywhere along the run of conveyor installed underground or in industry.

The design enables the belt to adopt its natural curve when loaded with material. The trough is dependent upon the quantity carried and can be adjusted for



The Sutcliffe Hammock Idler

materials with different specific gravities. The adjusting trough decreases the spillage and the design is such that any tendency of the load to be on one side of the belt is quickly corrected.

The rubber tube roller is designed to stand up to abrasive material and continual flexing due to variation in load. Although all impact due to heavy loads is easily absorbed, the hammock idler is not intended for heavy duty at loading and transfer points.

The design leaves a clear space beneath the roller to allow for cleaning and to prevent building up of material. In case of accident or damage to the idler, the likelihood of belt damage is lessened and replacement of the idler is easy. The hammock idler is suitable for all belt widths and may be fitted to existing installations.

New Staffa Hydraulic Pipe Bending Machine

The new 12 in. hydraulic pipe bending machine manufactured by Chamberlain Industries Ltd., Staffa Road, London, E.10, is designed to bend solid drawn steel pipe of 12.75 in. external diameter, with maximum wall thickness of .375 in., bending centres 8 ft., with a maximum angle of bend per stroke of 5°. It consists of a central former or saddle, mounted on an hydraulically operated ram. The former moves between two end chain fixings, thus bending the pipe which is contained between the central former and the retaining chains.

The ram unit, together with the end chain fixings is contained in a box section beam which can be rotated through 90°. This enables bending in a vertical or horizontal plane or at intermediate angles.

Working time for cold and unloaded bends in 12 in. bore tubing is cut to one 90° bend per hour, as against two per day by the conventional "Jimcrow" method. One man only is required to do the work.

The St. Clair Sampler

The St. Clair Sampler, recently tested by the Diamond Research Laboratory in Johannesburg, is particularly adaptable to the quick cutting of representative samples of narrow reef in the stopes and tunnels of the Witwatersrand and Orange Free State. In general, this equipment—the use of which is limited only by the availability of compressed air and piped water at stope faces or tunnel heads, has fulfilled a long-felt want.

The sampler and its use is shown in the illustration below. It is driven by an Ingersoll Rand "Multi Vane" air motor, size 3 G, with a maximum speed of 6,000 r.p.m. The cast aluminium handle grip is fitted with a trigger valve operating control and the drive is transmitted from the motor by an enclosed shaft to a transfer box, and the endshaft is driven by spiral bevel gear and with a reduction gear at 90°. Mounted on this shaft ($\frac{5}{8}$ in. dia.) are twin diamond impregnated cut-off discs of 5½ in. dia. with a distance piece of $\frac{7}{8}$ in. width between them. A roller guide of 4½ in. dia. controls the maximum depth of penetration.

A second handle is bolted to the driving shaft casing and at right angles to the motor. It provides a grip for the left hand to steady the machine and further guides the machine on a tubular rod. Thus, the sampler can be moved laterally running on a solid rod of any length, dependent on the head space available when working and the height at which rock specimens are to be taken. An adjustable collar is fitted to the inner rod which rests on the ground during operation; thus, the position of the outer tube and sampler is controlled. The inner rod takes the greater part of the weight of the machine, and gives rigidity and support when in operation. Straight cuts can be made in rockfaces with minimum vibration. Water and air are supplied by flexible pipes.

A number of tests have been made at the Diamond Research Laboratories, Johannesburg. While sampling



The St. Clair Sampler

is usually carried out in quartzite and reef, the tests were made with a block of black granite, of homogeneous structure and extremely hard.

The first cut (or plunge) is made in the rock face to the required depth, given by the roller guide. After the initial plunge has been taken, the machine is fed longitudinally and steadily down the rock face a little beyond the required length. The machine is then withdrawn, the supporting rod removed and one cut-off disc taken off. Horizontal cuts are then made at top and bottom of the sample to the same depth in preparation for the removal of the specimen. This is done by steel wedges and tapping with the hammer.

Metals, Minerals and Alloys

This week has been marked by the coming into action of the new Ministry of Materials, which has raised the prices for lead and zinc. Last week, it was pointed out in this column that the question of advancing prices was being discussed, at any rate as regards commonwealth production.

Copper.—There is so far at least no indication that the United States domestic price of 24½c. will be raised to the level of the higher price for imported metal and buying for consumption remains halved. The strike at the Garfield copper smelter of the A.S. & R. Co. is proving more obstinate than was anticipated and negotiations have been shifted to Washington as the Salt Lake City negotiations proved fruitless. As long as the strike continues the U.S. smelter output stands to be reduced by some 25,000 s.tons per month, thus greatly intensifying the shortage for civilian consumption. All copper materials have now been placed under allocation by the N.P.A.

The Copper Institute figures for June give the domestic output of crude as 87,086 s.tons (96,541 s.tons in May). Refined production fell to 105,127 s.tons (113,513 s.tons). Deliveries were also somewhat lower at 114,103 s.tons (118,113 s.tons). Refined stocks were practically unchanged at 60,912 s.tons (60,896). Outside the U.S. the output of crude in June is given as 105,483 s.tons (115,162 in May). Refined totalled 94,696 s.tons (97,005); while stocks of refined were slightly higher at 151,823 s.tons (150,549). Deliveries to fabricators were only 78,941 s.tons against 92,505 s.tons in May.

The British Bureau of Non-Ferrous Metal Statistics reports that U.K. supplies of copper on May 31 had been reduced to 107,501 tons compared with 115,040 tons at the beginning of the month, consumption of copper in all forms in May was 45,319 tons indicating a little more than two months supply.

Further negotiations have been found necessary between the Chilean Government and the Kennecott and Anaconda Companies operating in Chile, both of whose Presidents have gone to Santiago. It has been suggested in New York that these companies should be appointed selling agents for the 20 per cent of the output understood to be at the disposal of the Chilean Government.

The N. Rhodesian output in April was 28,251 tons against 23,625 tons in March.

Lead.—The Ministry of Materials has advanced the price of lead to British consumers by £20 to £180 per ton d.d. (U.S. equivalent 22½c. per lb.). The increase is said to be due to the increased cost of purchase. Corresponding adjustments as regards scrap are in hand by the Ministry of Supply. U.K. stocks improved during May to total 27,335 tons compared with 24,669 tons at the beginning of the month. May consumption is computed at 30,298 tons.

In the U.S. it is expected that government allocation will be put into force shortly as producers have been told to delay allocations to customers until the current week and consumers are consequently putting off paying premium prices and are said to have refused foreign offers for some 5,000 tons at 22¼c. duty paid. Mexican lead is quoted 21½ 22c. f.a.s. Gulf ports to Europe. It is believed that this order may permit manufacturers to purchase lead in foreign countries and use this lead without it being charged against the total lead allocation to the manufacturer.

The Vice-President of the St. Joseph Lead Co., Mr. Felix Wormser, has described the domestic price

of 17c. as unrealistic and retarding the development of domestic resources; as a result imports were declining sharply and in the first four months of the year were practically halved at 72,000 s.tons compared with 140,000 s.tons for the same period last year, due to the differential between domestic and world prices, and whereas imports in 1950 were 550,000 s.tons, he guessed that this year they might not exceed 250,000 s.tons. Domestic output should be about 400,000 s.tons and scrap lead about the same.

Tin.—The General Service Administration has notified Dutch and Belgian producers of metal that as the N.Y. price has remained above 103c. for seven trading days they will avail themselves of the break clause in their contracts and purchase not more than 100 tons in the second half of the year at prices above 103c. a lb. What will happen if the price falls below this remains to be seen. U.S. tin stocks on February 28 were reported by the Bureau of Mines as 37,986 tons (R.F.C. 17,498 tons, Industry 20,488 tons), with the Longhorn output for the first six months of 1951, 18,115 tons, or say 3,000 tons a month.

The Indonesian output in June is reported as 2,486 tons and for the half year, 15,297 against 15,717 tons a year ago.

U.K. consumption in May is computed at 2,263 tons; stocks on May 31, 1,850 tons.

Imports of concentrates into the Straits in June were 781 tons, divided as follows: Thailand 669 tons, Burma 73 tons, Indo-China 10 tons, other countries 29 tons.

Zinc.—The Ministry of Materials raised its U.K. selling price of lead by £30 from Saturday last to £190 per ton (U.S. equivalent 23½c. per lb.). The U.S. domestic ceiling price of 17½c. remains unchanged. U.S. consumers have been given until July 18 to file their requests for August allocations; thereafter the original date of the 15th of each month will be adhered to; trading is at a standstill until the results are known.

U.K. stocks at the end of May were 31,954 tons (31,581 on May 1). Consumption for the month was 22,746 tons and for the current five months 117,462 tons.

An electric generating and transmitting plant has been ordered by the Cerro de Pasco Corporation from the Westinghouse Electric International Co. calculated to assure an eventual output of 200 s.tons of zinc a day from its Peruvian property.

The Rhodesian Broken Hill output in April was 1,900 tons.

Columbium - Tantalum.—Reuter reports from British Guiana that Willems Industries Inc. has obtained a five-year concession to prospect 2,000 acres of what is described as "rich columbite-tantalite deposits in the Mazaruni district" with temporary permits to cover a wide area. A grant to a local company has also been made.

Tungsten.—The Ministry of Materials has announced that it will become the sole importer and distributor of tungsten ores and concentrates from July 30 next. Shipments already licensed and sold will not be affected. Under these circumstances buyers are naturally only interested in material for immediate delivery. The price is nominally 525s. per unit f.o.b.

Presumably the price will be governed by the agreement announced by the Allied Materials Conference of a ceiling of \$65 per s.t. unit. It appears that the reservation by Brazil to the agreement, noted last week, had reference to the Government's desire to fix prices only on a "reciprocal" basis which would mean similar limitation of prices for materials which Brazil imports.

Platinum.—As mentioned last week the authorities here have issued an order that all licences which had not been executed up to July 16 for the export of platinum are now revoked and the incessant demand which there

has been for some considerable time for the metal for export is no longer in evidence. There does not seem much likelihood of licences being granted for any destinations, except the United States and British Colonies—in the latter case there is never a great demand—and therefore it is anticipated that the free market price, which was as high as £46 per oz., recently, will be much lower and approximate more closely to the official quotation.

The London Metal Market

(From Our Metal Exchange Correspondent)

The feature of the last few days' trading has been the unexpected amount of support being given to the market, and the decline in backwardation. Many dealers expected the price to recede rapidly as soon as it became definite that the American authorities were not prepared to pay more than \$1.03 per lb. for the Indonesian and Belgian tin. Events have shown them to be wrong up to now, but the general opinion in the market must remain bearish unless some new arrangement can be reached with the Americans to prevent the additional tonnage becoming available to the world market. The backwardation has reached more normal limits, and it is hoped that this state of affairs will be maintained now that a tonnage of tin which has been held up in the London docks for some time has at last been unloaded.

Apparent consumption in the U.K. remains rather above average, but this may represent re-stocking prior to the summer shut-down. In America the R.F.C. sold more tin than in previous weeks to consumers, and it is considered consumers will now cover their requirements as and when they arise and no longer wait for any further decline in the market.

On Thursday the official close on the tin market was: Settlement price £855, Cash Buyers £855, Sellers £860; Three months' Buyers £821 10s., Sellers £822 10s. In the afternoon the market was steady. Turnover for the day was 100 tons. Approximate turnover for the week was 1,050 tons.

The Eastern price on Thursday morning was equivalent to £852 per ton, c.i.f. Europe.

Iron and Steel

It is a welcome development that the Iron and Steel Corporation and the chiefs of the British Iron and Steel Federation have composed their differences. The settlement reached concedes to the State sponsored Corporation supreme authority, but leaves in the hands of the subsidiaries of the Federation the day to day duties surrounding the acquisition of supplies of raw materials for the industry.

The Ministry has also made the first overt move to bring prices into closer alignment with current values. The export price of British small bars and light sections has been raised to £40 10s. per ton, a rise of £7 11s. and the export price of other heavy steel products has been advanced £5 per ton. Even after these steep rises British quotations are still well below Continental levels and there is wide scope for the expansion of the steel export trade.

The difficulty is that with a slightly reduced ingot output steel makers must cater for vastly increased home requirements. In one direction substantial relief is promised. The opening of the new steel plant in South Wales this week is an event of the highest national importance. It is the most modern integrated steel plant in the world, and with a potential capacity of 1,500,000 tons a year promises a most valuable expansion in the supplies of tin plate and sheet steel. For these commo-

ditities in particular there is an unlimited demand and though some of the older plants will ultimately become redundant, present requirements are so heavy that there is no immediate question of stoppages.

Expansion of pig iron production is now engaging close attention. Blast furnacemen are now receiving better supplies of fuel and ore and see now more favourable prospects of overtaking the heavier demand for pig iron for the foundries and melting shops. To compensate for the shrinkage in scrap supplies it is hoped to raise the output of pig iron by 1,000,000 tons in the next twelve months.

Provision of adequate tonnages of steel semis for the re-rolling industry is also proving difficult but there has been a slight improvement in the arrivals of Continental material. These deliveries however are still heavily in arrears and for new business Belgian producers are quoting fantastic prices.

All the rolling mills are heavily overloaded with orders for defence. More export business of a substantial character is on offer and it is going to be difficult to reconcile the pressure for more export trade with the heavy requirements of home industries.

JULY 19 PRICES

COPPER

Electrolytic £234 0 0 d /d

TIN

(See Metal Notes above for Thursday's Metal Exchange prices)

LEAD

Soft foreign, duty paid £180 0 0 d/d
Soft empire, including secondary lead ... £180 0 0 d/d
English lead £181 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ... £190 0 0 d/d
G.O.B. spelter, domestic £190 0 0 d/d
Electrolytic and refined zinc £194 0 0 d/d

ANTIMONY

English (99%) delivered,
10 cwt. and over £390 per ton
Crude, (70%) £305 per ton

NICKEL

99.5% (home trade) £454 per ton

OTHER METALS

Aluminium, £124 per ton. Platinum (scrap), £27.
Bismuth, 25s. 9d. lb. Platinum, £27/£33 5s. nom.
Cadmium, 18s. 3d. lb. Rhodium, £45 oz.
Chromium, 5s. 11d. lb. Ruthenium, £30 oz.
Cobalt, 17s. 6d. lb. Quicksilver, £73 10s./£74
Gold, 248s. f.o.z. ex-warehouse.
Iridium, £65 oz. nom. Selenium, 25s. nom. per lb.
Magnesium, 1s. 6d. - 2s. lb. Silver (bar), 78½d. f.o.z. spot
according to quantity. and forward.
Osmiridium, £35 oz. nom. Tellurium, 19s. lb.
Osmium, £70 oz. nom.
Palladium, £8 10s. oz.

ORES, ALLOYS, ETC.

Bismuth 30% 12s. lb. c.i.f.
20% 9s. 6d.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £11 per ton c.i.f.
" " (concentrates) £11 per ton c.i.f.
" " Refractory £10 12s. per ton c.i.f.
Baluchistan Metallurgical ... £11 11s. per ton c.i.f.
Magnesite, ground calcined ... £26 - £27 d/d
Magnesite, Raw £10 - £11 d/d
Manganese, Best Indian ... (Nominal)
Molybdenite (85% basis) ... (Nominal)
Wolfram (65%), U.K. 520s. f.o.b.
Tungsten Metal Powder ... 35s. nom. per lb. (home)
(for steel manufacture)
Ferro-tungsten 33s. nom. per lb. (home)
Carbide, 4-cwt. lots ... £30 3s. 9 d/d per ton
Ferro-manganese, home £37 19s. 10d. per ton
Ferro-manganese, export Nom.
Brass Wire 2s. 6½d.
Brass Tubes, solid drawn ... 2s. 0½d.

The Mining Markets

(By Our Stock Exchange Correspondent)

Stock markets had another quiet week. Holiday influences and uncertainty over the results of peace negotiations in Korea caused idle conditions. The new 3½ per cent Gas Stock, details of which were given last week, was all taken up, but it seems probable that Government Departments and institutions were the main subscribers. The scrip now stands at a small discount to its issue price.

Lead zinc issues were a firm market following the announcement by the new Ministry of Materials of a £30 increase in zinc to £190 per ton, and a £20 increase in lead to £180 per ton. Market circles, supported by American reports, believe that the U.S. ceiling price of lead may well be raised before long.

The price of Rhodesian Broken Hill shares rose after the publication of the full report. Prospects for the current year are good. The yield at the present price of 21s. works out at about 20½ per cent on last year's special dividend. The main difficulty still lies in assessing the remaining life of the mine. At 2,436,000 tons ore reserves at December 31 last were down by 146,000 tons. It seems fairly safe to allow for a life of between 17 and 20 years, estimating from known reserves to-day.

A point of interest among Barriers was the statement issued by Mining Trust that Mount Isa Mines is to make an offer to acquire the entire share capital. No details have yet been published, but the directors of Mining Trust advise shareholders to retain their holdings pending a further announcement. Following the news, the price jumped and touched 8s. at one time before reacting.

Conditions in the Johannesburg market remained idle, and little interest was shown in London. Prices of Kafir

issues were erratic. In the O.F.S. section interest developed in Geoffries and President Steyn. The latter shares were stimulated by the strike in the K.P.9 borehole. The Basal reef was cut at a depth of 4,450 ft. assaying 40.1 dwt. over 22.6 in., equivalent to 906 in. dwt. This is the third borehole in the vicinity to give satisfactory results, the others being K.P.7, 667 in. dwt. and W.P.6, 546 in. dwt. Welkom announced that it is proposed to start the reduction plant during the current quarter, for the purpose of making metallurgical tests. Development rock will be used.

Last week's flurry of interest in West African issues died away. Taquah and Abosso are paying a final dividend of 12½ per cent making 17½ per cent for the year. This compares with 25 per cent paid last year. The Chairman pointed out last October that profits for the year ending March 31, 1951, would bear practically the full rate of income tax. Blackwater mines operating in New Zealand report the collapse of a portion of the South shaft 360 ft. below surface. This has blocked the shaft and caused failure of ventilation and pumping systems. Owing to danger from gas and water and further collapse, the Government Inspector of Mines has prohibited all underground working. Prospects of re-opening cannot be regarded as hopeful.

The increased rate of production planned by the International Nickel Co. for the end of this year has already been reached. This has been achieved in three months as against the anticipated period of eight months. Production is now running to the tune of 21,000,000 lb. per month, a peace-time record.

Consideration is being given to the form of a new issue to be made by Nchanga. The Chairman announced that the cost of proposed extensions is to be considerably reduced, with a consequent scaling down of fresh capital required. The shares remained quietly firm.

FINANCE	Price	+ or -	on week
African & European	34½	+	1
Anglo American Corp.	7½	+	1
Anglo-French	23½	+	1
Anglo Transvaal Consol.	37½	-	2
Camp Bird	13½	-	6
Central Mining (21 shrs.)	43½	-	1
Consolidated Goldfields	2½	-	1
Consol. Mines Selection	3½	-	7
East Rand Consols.	4½	-	1
General Mining	5½	-	1
H.E. Prop.	6½	-	1
Henderson's Transvaal	9½	-	3
Johnnies	3½	+	1
Rand Mines	6½	-	1
Rand Selection	40½	-	7
Union Corporation	9½	-	1
Vereeniging Estates	6½	-	1
Wits	32½	-	6
West Wits	2½	+	1
RAND GOLD			
Blyvoor	48½	+	7
Brakpan	18½	-	1
City Deep	2½	+	1
Consol. Main Reef	2½	-	1
Crown	4½	-	1
Daggas	3½	+	1
Dominion Reefs	1½	-	1
Dourfontein	38½	-	1
Durban Deep	3½	-	1
E. Daggas	24½	-	7
E. Geduld (4½ units)	2½	-	1
E. Rand Props.	32½	-	1
Geduld	7½	-	1
Gooldvlei	36½	+	1
Libanon	16½	-	1
Lupatards Vlei	11½	-	3
Marivale	21½	-	1
Modderfontein B.	5½	-	1
Modderfontein East	31	-	1
New Kleinfontein	32½	-	7
New Pioneer	23½	-	1
Randfontein	17½	-	1
Robinson Deep	13½	-	1
Rose Deep	36½	+	7
Sinmer & Jack	6½	-	1
Springs	9½	-	1
Sub Nuel	31	-	1
Van Dyk	14½	-	1
Venterspost	29½	-	1
Vlakfontein	18½	-	1
Vogelstruif	26½	-	1
West Driefontein	6	+	1
W. Rand Consolidated	40½	-	1
Western Reefs	38½	-	1

MISCELLANEOUS GOLD	Price	+ or -	on week
G.F. Rhodesian	8½	-	1
London & Rhodesian	6½	-	1
Meyers	2½	-	1
Mysore	6½	-	1
New Guinea	17½	-	1
Nundydoo	12½	-	1
Quegum	3½	-	1
Oroville	8½	-	1
St. John d'El Rey	38½	-	1
Zans	33½	-	1
DIAMONDS			
Anglo American Inv.	4½	+	1
Cavits	36½	-	1
Cons. Diam. of S.W.A.	31	-	1
De Beers Deft. Bearer	57½	-	1
De Beers Pld. Bearer	17½	-	1
COPPER			
Chartered	71½	+	1
Indian Copper	4½	-	1
Messina	5 17/64	-	1
N-kanza	7½	-	1
Rhod. Anglo-American	58½	-	1
Rhodesian Selection	38½	+	1
Rhokana	10½	-	1
Rio Tinto	21½	-	1
Roan Antelope	20½	-	1
Selection Trust	52½	-	1
Tanks	47½	-	1
Thariss Sulphur Br.	48½	-	1
TIN (Eastern)			
Anglo-Burma	3½	-	1
Ayer Hitam	28½	-	1
Bangrin	34½	-	1
Gopeng	14½	-	1
Hongkong	11½	-	1
Ipo	28½	-	1
Kanbantuan	13½	-	1
Kepong Dredging	12½	-	1
Kinta Tin Mines	15½	-	1
Kramat Pulai	4½	-	1
Layang Dredging	24½	-	1
Pahang	15½	-	1
Pengkalan	11½	-	1
Petaling	12½	-	1
Rambutan	17½	-	1
Siamse Tin	23½	-	1
Southern Kinta	14½	-	1
S. Malayan	28½	-	1
S. Tronoh	22½	-	1
Sungai Kinia	17½	-	1
Tekka Taiping	9½	-	1
Tronoh	28½	-	1

TIN (Nigerian and	Price	+ or -	on week
Miscella veins)			
Amalgamated Tin	10½	-	1
Beralit Tin	26½	+	1
Boschi	4½	-	1
British Tin Inv.	18½	-	1
Ex-Lands Nigeria	6½	-	1
Geevor Tin	16½	-	1
Gold & Base Metal	3½	-	1
Jantar Nigeria	6½	-	1
Kaduna Tin Area	11½	-	1
Kaduna Prospectors	4½	-	1
Kaduna Syndicate	6½	-	1
London Tin	57½	-	1
Ribon Valley	1½	-	1
United Tin	2½	-	1
SILVER, LEAD, ZINC			
Broken Hill South	55½	-	1
Burma Corporation	4½	-	1
Consol. Zinc	33½	+	1
Lake George	27½	+	1
Mining Trust	7½	-	1
Mount Isa	46½	-	1
New Broken Hill	30½	-	1
North Broken Hill	72½	-	1
Rhodesian Broken Hill	21½	+	1
San Francisco Mines	33½	-	1
Trepca	4½	+	1
MISCELLANEOUS			
BASE METALS & CO.			
Atoll Collieries of S.A.	63½	+	1
Associated Manganese	65½	-	1
Chinese Engineering	2½	-	1
C.P. Manganese	51½	-	1
Natal Navigation	51	-	1
Wankie	24½	+	1
Wilbank Colliery	3½	-	1
CANADIAN MINES			
Doner	32½	-	1
Hudson Bay Mining	25½	-	1
International Nickel	87½	-	1
Mining Corp. of Canada	6½	-	1
Noranda	81½	-	1
Quebecmont	28½	-	1
OIL			
Anglo-Iranian	5½	+	1
Apex	2½	-	1
Atoll	25½	-	1
Burmah	65½	-	1
Canadian Eagle Bearer	35½	+	1
Mexican Eagle	24½	+	1
Shell	4½	-	1
Tejeda Leasehold	29½	-	1
T.P.D.	42½	+	1
Ultramar	35½	+	1

Company News & Views

Variations in Tin Outputs and Prices Policies

Five companies in the Anglo-Oriental (Malaya) group of tin companies have now published their results for the year ended March 31, 1951.

Company and Issued Capital	Year to March 31	Output: tons metal	Price received per ton metal	Costs per ton metal	Dividends	Forward Balance
			£	£	s. d.	£
Rawang Conc.	1951	380	1,008	681	5 0	175,143
£200,000 (£1)	1950	155	564	501	Nil	119,760
Rawang Tin Fields	1951	976	834	483	1 10.3	134,935
£876,003 (10s.)	1950	665	564	432	6	146,520
Kampong Lanjut	1951	245	1,178	—	Nil	66,611
£300,000 (£1)	1950	—	—	—	Nil	51,338
Kramat Tin Dredg.	1951	335	857	427	3 6	80,095
£165,000 (5s.)	1950	553	587	346	2 6	179,752
Kuala Kampar	1951	1,902	911	—	10 0	507,371
Tin Fields	1950	1,845	567	362	3 0	386,186
£615,000 (10s.)						

Statistics referring to output, price and costs to nearest ton or £

The cardinal fact which emerges from the above table is that in times of rising prices it is essential to be able to raise output as the price increases. Although all the companies listed above, with the exception of Kramat Tin Dredging, were able to step up their production over the previous year's figures, in terms of revenue what really mattered was how much tin they were able to market between November, 1950, to the end of their fiscal year, for during this time both the spot price and three months' price were over the £1,000 per ton mark. Kampong Lanjut, for example, first entered the market in November, 1950, so that it was able to obtain excellent prices for its production. Rawang Concessions was able to raise its output as the price increased to good advantage; while Rawang Tin Fields, although its production figures are much improved over the previous year, did not have available the quantities of tin each month from November onwards as it had in the previous eight months. Kuala Kampar maintained a high output throughout the year with the reward of being able to raise its dividend and also to increase its forward balance. Kramat Tin was another company whose output failed to keep pace with the higher price.

Nchanga's Third Extension Programme

The big capital expenditure programme of Nchanga Consolidated Copper Mines to raise production from 64,000 tons to 108,000 tons per year which was outlined in the chairman's speech at the last annual meeting figures prominently in the address from the company's new chairman, Sir Ernest Oppenheimer, circulated with the accounts for the year to March 31, 1951.

Last year's estimates of the cost of this programme, known as the Third Stage Extensions, was put at £5,700,000. Since that time, however, a revision of requirements has been made which, it is expected, will reduce the overall cost substantially. This has been made possible by a new and more favourable forecast of the future milling grade with the result that the fourth unit of the leach and electrolytic plant originally provided for in the estimate will not now be needed.

The company intends to finance this and other capital commitments in part out of profits but mainly by raising fresh capital and, the chairman stated, "consideration is now being given to the form the additional finance should take." As a first step in providing part of the finance out of profits £700,000 has been transferred to general

reserve out of earnings during the year under review bringing this fund up to £1,200,000.

Year to March 31	Copper Sales*	Operating Costs	Tax	Net Profit	Reserves
	£	£	£	£	£
1950	3,982,136	2,115,166	834,602	696,708	1,200,000
1951	8,965,983	3,548,570	1,864,926	3,122,917	700,000

*After stock adjustment.

The strong demand for copper and the rise in price to £202 per ton for the last seven months of the company's fiscal year was reflected in the expansion of copper sales, after adjusting for stock, by £4,983,847. Taxation liabilities increased by over £1,000,000. But the increased rate of production kept costs down so that net profit jumped by £2,416,209 so that even after providing £700,000 for reserves and distributing 37½ per cent (7s. 6d. per £1 unit of Stock) which absorbed £2,625,000, there remained the sum of £104,516 to be carried forward compared with £129,239 previously.

The dividend rate of 37½ per cent is not strictly comparable to the 20 per cent paid last year as owing to the special circumstances attending the company's transfer of domicile to Southern Rhodesia it was three-quarters tax free to U.K. residents. Although in the current year the dividend distribution will be wholly subject to tax this will be mitigated by double taxation allowances.

Operating results for the last two years are shown below.

Year to March 31	Milled (s.tons)	Grade Copper %	Copper Output (tons)	Ore Reserves Tons	Grade %	Development ft.
1950	1,275,400	4.84	38,761	138,391,954	4.66	70,046
1951	1,537,800	5.90	58,052	136,859,491	4.65	74,819

Prospects for the current year at this date look bright enough. The price of copper has advanced since the close of the last financial period. Production during the latter part of the year under review was running at an annual rate of around 64,000 tons and despite the deterioration in the coal supply position, total production should be higher this year than during the period under review.

The £1 stock units of Nchanga are currently standing at 7 5/16ths to yield 8.6 per cent on the 37½ per cent dividend.

Rhodesia Broken Hill's Profit Expansion

Net profit of Rhodesia Broken Hill Development, the lead-zinc producer, for 1950 advanced sharply by £727,208 to £1,753,736. Taxation was lower and the dividend was raised to 45 per cent, tax free, against 40 per cent gross in 1949. In his statement circulated with the accounts, Sir Ernest Oppenheimer, shows the degree of taxation benefits accruing to the company by its transfer of control from the U.K. to Northern Rhodesia. In 1949 the proportion of profits absorbed by tax was 54 per cent, while during the period under review it fell to 36.5 per cent. This saving, the chairman explained, is due partly to the lower rate of income tax now payable by the company and, to a greater extent, to the fact that it is no longer liable for the payment of profits tax.

The year under review was once more a very successful one. In fact, the sales proceeds and the resulting profits earned both constitute a record. This sound position has been effected largely by the higher base metal prices and also, of course, to the substantial tax saving due to the transfer of control to Northern Rhodesia.

Year to Dec. 31	Mining Metal Sales*	Mfg. Costs	Tax	Net Profit	Re-serves	Forward Balance
	£	£	£	£	£	£
1949	3,377,496	729,176	1,206,896	1,026,528	300,000	163,103
1950	4,055,665	835,687	1,009,139	1,753,736	400,000	201,909

*Allowing for realization charges.

The estimated cost of plant extensions have been affected adversely by both rising prices and delays in delivery. In the case of the extensions to the lead smelter, anticipated costs have increased to approximately £575,000, and in the case of the zinc plant extensions, estimated costs have risen to £200,000. However, it is now expected that the additional lead plant will come into operation towards the end of the current year.

Operating results for the last two years are shown below.

Year to Dec. 31	Milled (s.tons)	Concentrates		Assay Value		Ore Reserves (proved)
		Lead (s.tons)	Zinc (s.tons)	Lead %	Zinc %	
1949	128,719	21,070	38,630	77.2	56.7	2,582,000
1950	125,538	21,321	38,805	76.67	56.1	2,436,000

Other highlights of the chairman's statement were that the production of fused vanadium which was suspended during the year, recommenced at the beginning of the current year. In view of the serious world shortage of sulphur consideration is being given to extending the activities of the Iron Duke Mine with a view to supplying pyrites, hitherto used only in the company's own works and on the Copperbelt, to large-scale users in the Union. During the year under review sulphuric acid production totalled 9,169 s.tons. Finally, the chairman reported that metallurgical investigations are proceeding to determine whether the company should undertake the production of refined cadmium which it appears might be obtainable from the zinc plant purification residues.

The future is faced with optimism. Profits for the current year "show a substantial improvement on those for the corresponding period of last year and there is every indication that this improvement will continue," declared the chairman.

Henderson's Transvaal Estates' Steady Progress

The report and consolidated accounts of Henderson's Transvaal Estates and its four subsidiaries—Tweefontein United Collieries, Tweefontein Colliery, Mineral Holdings and The Henderson's Consolidated Corporation—for the year to March 31, 1951, show some satisfactory changes.

The consolidated profit and loss account recorded that gross revenue from investments was up from £26,521 to £42,778 and stock and share transactions realized a profit of £62,540 against the previous year's loss of £1,337. These better results more than offset the small decline in the company's revenue from coal mining which is the chief source of its income.

Year to March 31	Coal Profit*	Gross Revenue	Tax	Net Profit†	Divi- dend %	Forward Balance
1950	183,419	223,121	69,821	70,653	15	153,188
1951	179,596	266,093	88,182	93,509	15	173,190

*After providing for working expenses, replacements.

†After allowing for minority interests.

The consolidated balance sheet disclosed that revenue reserves, together with the surplus arising on consolidation of net assets of subsidiaries, but excluding the interest of minority shareholders, advanced £48,889 to £89,213.

During the year the company liquidated its holding in Delagoa Bay Development Corporation (in voluntary liquidation), realizing a profit, after tax, of £8,500, which has been credited to general reserve. The reserve fund now stands at £350,000.

At the annual meeting to be held on August 9 next shareholders will be interested to hear what the chairman, Sir Joseph Ball, will be able to tell them about the diamond drilling programme now being carried out on farm Vryheid No. 779 adjoining the property of Messina

(Transvaal) Development. The company holds mineral rights in this farm through its subsidiary, Mineral Holdings, and at last year's meeting the chairman said that results up to that time indicated that payable copper ore existed but that much further work on the property would be necessary before the extent of the ore occurrences, in payable quantities, would be known.

South Crofty Anticipates Dividend

Despite a serious fire, pumping troubles which resulted in flooding, and a shortage of labour, South Crofty secured an additional £56,000 for the sale of its tin and other products—arsenic and wolfram—than in the previous year. The better results were due to the increased tin price as, due to the shortage of labour, output declined by nearly 19 tons.

Year to Dec. 31	Tons Crushed	Black Tin Recovered tons	Recovery per ton lb.	Cost per ton £ s. d.	Develop- ment ft.
1950	39,808	497	27.99	5 3 6	5,428.5
1951	37,716	479	28.43	5 15 4	4,906.7

Mr. Harry Rich, chairman, in his address circulated with the report and accounts stated that if the Government had helped the company at the time of the Westwood Report, the breakdown of the Cornish Pump would in all likelihood have been averted, whereas it now appears that costs through this misfortune will probably amount to £40,000. In view of this emergency expenditure the company is taking all steps to conserve its cash resources, and have therefore written off, in addition to the customary depreciation, £21,250 from land and mining rights including development.

Year to Dec. 31	Tin Revenue	Mine Expenditure	Tax	Net Profit	Forward Balance
1950	209,934	204,996	272	Dr. 975	7,700
1951	266,345	217,472	22,758	20,167	7,319

The chairman does not think that the long-term tin position indicates much lower prices and feels therefore that the prospects at South Crofty are distinctly good.

The last distribution made by South Crofty was in 1945 and barring any unforeseen circumstances, the directors will put the company back into the dividend list at the end of this month when they will declare an interim dividend of 5 per cent, less tax.

Company Shorts

Tanami Gold Mining Syndicate.—The accounts of this company for the year 1950 show a loss of £5,235 compared with £1,416 in 1949.

Hampton Gold Mining Areas.—This company's development expenditure of £9,317 incurred during the year to March 31, 1950, has again been debited to profit and loss account, increasing that adverse balance to £32,590.

Ashtanti May Mine Return.—20,000 tons yielded 16,029 oz., giving a net mines profit of £83,339. Unfortunately in last week's issue Ashtanti's profit figure was attributed to Bibiani, the monthly returns for which were repeated.

Modder B's Capital Reduction.—The reduction in the capital of Modderfontein B. Gold Mines by £70,000 to £490,000 in 2,800,000 shares of 3s. 6d. each and the return to shareholders of 6d. per share, has now been confirmed by the Supreme Court in South Africa.

The repayment of 6d. per share in cash will be made to shareholders registered at the close of business on July 31 and cheques will be posted on or about August 29.

Charterland & General Big Profit Increase.—Gross revenue of the Charterland & General for the year ended May 31, 1951, was £129,956 against £43,934. Net profit amounted to £61,994 (£21,783) to which was added £20,792 brought in, making £82,786 (£40,626) available. A sum of £30,000 was transferred to general reserve. Dividend payments aggregating 10 per cent and a bonus of 2½ per cent absorbed a net amount of £29,529 and the remainder, £23,257, was carried forward compared with £20,792 in 1949.

The Broken Hill Proprietary Co.—Subject to audit, the net profit of the Broken Hill Proprietary Co. for the year ended May 31, 1951, was £821,709. Receipts from general investments, subsidiaries and other sources amounted to £902,041, giving a total net profit of £1,723,750. These results have been arrived at after providing £1,209,328 for depreciation and £1,000,000 for income tax.

Taquaah and Abosso—Taxation Swallows Profits.—Preliminary announcement from Taquaah and Abosso Mines giving results for the year ended March 31, 1951, showed that profit for the year fell to £39,132 against £73,669 previously. This figure was arrived at after charging £40,166 (£38,410) for depreciation, the sum of £9,642 (£9,000) for gratuities to African employees, and taking into account U.K. taxation amounting to £44,000 against nil previously. Dividends aggregating 8.4d. per 4s. share absorbed £36,144, leaving, with the balance of £127,612 brought in, £130,600 to be carried forward.

The Selukwe Gold Mining & Finance Co.—Profit for the year ended March 31, 1951 of Selukwe Gold Mining amounted to £2,524 which, added to the £1,405 brought in made a total of £3,929 available. Income tax accounted for £419, and the balance, £3,510, was carried forward. The company's principal asset is its holding of 1,042,467 fully paid \$1 shares of Silbak Premier Mines, out of a total issued capital of 2,500,000 shares of \$1 each. After five years of non-profitable operations, Silbak Premier has announced a net profit for the year 1950 or \$164,891.

Mazapil Copper.—The group profit for the calendar year 1950 of The Mazapil Copper Co., after providing for expenses and £56,101 for taxation, amounted to £93,367, against £67,483. The sum of £65,000 (£35,000) was allocated to development reserve and 10 per cent. (5 per cent.) was paid on the issued capital of £600,000 Ordinary stock units of £1 each which absorbed a net amount of £31,500 leaving £76,655 to be carried forward. Mr. C. R. Darlington, chairman, stated that a rich copper ore body has been discovered recently in adjoining property and is developing most favourably, and it is believed that this ore body also traverses the Company's property. The annual meeting will be held in Manchester on July 31.

The Peña Copper Mines.—This company's report and accounts covering the year 1950 show that while no ore was extracted from the mine, a small amount of work was done towards re-starting operations underground and that 11,847 tons of ore were delivered and shipped from stock. However, 163 tons of copper precipitate were produced and 154 tons delivered to Spanish works. After charging depreciation on plant and providing for other expenses profit was £6,585 compared with £12 previously. The company suffered heavily from the anomalous exchange rate structure now operative in Spain and a loss of £17,598 was recorded on bringing sterling from Spain to this country. The sum of £2,300 brought in last year to cushion the exchange differences has been written back to profit and loss. £13,039 was brought forward from 1949 and after providing for the foregoing the credit balance was £4,326, which is to be carried forward.

Indian Copper Corporation—No Change.—Although base metal producers and in particular, copper producers, noticeably improved their position last year, the preliminary statement of the results of the Indian Copper Corporation for 1950 showed little change over that of the previous year. Net profit was £62,531 against £63,552. This net surplus was struck after providing £85,000 (same) for depreciation,

£347,000 (£343,000) for taxation, £30,000 (£100,000) for general reserve, and writing off £95,651 (nil) on mining development and general expenditure. From the £100,097 (£100,417) available, the dividend of 12½ per cent (same) absorbed £59,994, and the balance carried forward was £40,103 compared with £37,566 previously.

Exploration Company Reduces Debit Balance.—The profit for the year 1950 of The Exploration Co. was £1,565 and was applied to reducing the company's debit balance, which now stands at £50,516. Investment income totalled £5,430 against £2,865 for 1949, which is the highest yet achieved since the war. Another bright spot in the accounts was the net profit of £2,202 on realized investments, which compares with net losses under this heading in 1949 amounting to £27,541.

The company's portfolio of quoted investments is divided into two parts: those in which the company's holding is above £3,000 and those in which it is below. The former list is made up chiefly of mining companies, but the latter represents a wide variety of interests both economically and geographically. Although the market value of the company's quoted investments on the London Stock Exchange is £44,850 below their book value of £119,772, the market value of Silvermines Lead & Zinc quoted in Dublin at £38,221, is well above its book value of £21,072.

Phoenix Prince—Improved Results but no Dividend.—Despite the fact that Phoenix Prince Gold Mining, the Rhodesian gold producer, during the year ended March 31, 1951, crushed a record tonnage, lowered its working costs and raised its output of gold by 187 oz. to 14,599 oz. its future prospects do not appear bright. The native labour position is causing grave concern, ore reserves, which have been falling continuously since the war, dropped a further 43,000 tons and the overall value of the reserves has been reduced by 0.04 dwt. per ton.

Although the accounts show an increase in revenue of £16,763 at £183,750, the increase in taxation by £16,289 to £20,248 nullified this creditable improvement and, after meeting this liability, providing £19,090 for depreciation and transferring £9,768 to mines development redemption, net profit for the year was reduced to £2,240.

The chairman, Mr. Alexander Macquistin, stated that owing to the heavy taxation levy and lower ore reserves no dividend has been recommended.

Johnson Matthey's New Share Issue.—Johnson Matthey & Co., the gold and silver refiners, have announced that Treasury consent has been obtained to an issue of 737,776 Ordinary shares.

Subject to the passing of the necessary resolution for an increase in the authorized share capital, these shares are to be offered to Ordinary shareholders and loan stockholders on the basis of one new Ordinary share of £1 for each Ordinary share held, and one new Ordinary share of £1 for each £3 12s. nominal of 3½ per cent unsecured convertible loan stock. The price at which the new shares will be offered for subscription will be announced on or about July 24. It is proposed that the new Ordinary shares shall rank for all dividends which may be declared in respect of the year ending March 31, 1952. After careful consideration of all known factors affecting the business of the company, the directors consider that they should be in a position to recommend for the year ending March 31, 1952, a total dividend of 15 per cent on the increased Ordinary Share capital.

Holders of Ordinary shares or loan stock on the register at the close of business on July 17 will be given the opportunity of applying for any Ordinary shares which are not taken up on letters of rights.

OAKLAND

**WANTED REGULARLY
CONTAMINATED**

ZINC ORES containing CADMIUM
ZINC ORES containing COPPER
ZINC ORES containing LEAD

METAL COMPANY LIMITED
LONDON OFFICE: 94, New Bond Street, London, W.1

Telephone: GROsvenor 5241/4. Cables: AMOMET LONDON.
Telegrams: AMOMET WESDO LONDON.

ZINC OXIDES and RESIDUES of every description
TIN ORES and RESIDUES of every description
CADMIUM-BEARING ORES and RESIDUES

COMPLEX ORES AND RESIDUES OF ANY KIND

OAKLAND WORKS • WILLINGTON • DERBY

Telephone: REPTON 391 and 392

Topical News in Brief

Iron Ore Discovered in Mexico.—A deposit of iron ore, estimated to contain some 15,000,000 tonnes of 67 per cent. ore, has been discovered near Cerro del Cubero, Michoacan, near the Pacific Coast, according to a Reuter report.

Liberia Exports Iron-Ore.—The Republic Steel Corporation is reported to have received a shipment of 10,000 tons of 69 per cent ore at Baltimore shipped from the Domi Hills, 40 miles N.W. of Monrovia, Liberia, where 25,000,000 tons are estimated to have been proved.

Rehabilitation of Italian Sulphur and Coal Mines.—The Industry Commission of the Italian Senate has approved the appropriation of approximately 18,000 million lire for the rehabilitation of the sulphur and coal mining industries. Sulphur and coal mines will be enlarged and equipment brought up to date. Nine thousand million lire out of that total are destined for the sulphur mines.

U.S. Views of Non-Ferrous Metal Price Stabilization.—Leading U.S. non-ferrous metal suppliers indicated that they would not support the British Government's views for an international stabilization of prices of non-ferrous metals, states a Reuter report. They also predicted that the plan for an international allocation scheme for copper, lead and zinc would not be carried out because it was not supported by uniform prices.

Boliden Builds New Ore Concentration Works.—A new ore-concentration plant, reported to be one of the largest and most modern in Europe, is at present being built by the Boliden Mining Co. in North Sweden. Built in two sections, the new works will have a total annual capacity of 1,000,000 tons when completed early in 1954. The length will be 100 metres and the width 80 metres, while the subterranean crusher is situated at a depth of approximately 90 metres.

Work Started on South African Oil-from-Coal Plant.—Work has started on the new government undertaking to produce oil from coal, according to the *Rand Daily Mail*, quoted by Reuter. Situated in the Coalbrook district, near Vereeniging, the plant will produce about 60,000,000 gallons of motor spirit and Diesel fuel a year, equal to about 20 per cent of South Africa's requirements. In addition, a wide range of by-products will be manufactured. Provision is made for the eventual expansion of the plant to produce 100,000,000 gallons of fuel a year. About 80 per cent of the installations will be supplied by Germany although some will come from the U.S.

Margam Abbey Steel Plant Opened.—The Margam Abbey works of the Steel Company of Wales, stated to be the largest and most up-to-date steel works in the world, erected at a cost of approximately £75,000,000, were formally inaugurated on July 17 by the Chancellor of the Exchequer. When the present plans are completed, output will amount to 1,500,000 tons of steel ingots p.a., to be rolled into various products. Strip from the Margam Abbey works will go either to the cold rolling mill nearing completion at the Abbey works, or to the tinplate works at Trostre, near Llanelly, expected to be in production this autumn. Some of the equipment installed in the Margam Abbey works was supplied by the United States under Marshall aid.

Orissa Mining Corporation Formed.—Following discussions between the Indian Government and officials of the Tata Iron and Steel Co., it has been decided to form a mining corporation to exploit the mineral resources of Orissa, on the east coast of India. The State Government will own 60 per cent of shares issued and Tata will be offered the remaining 40 per cent. The new concern will take over the lease of all mines in the State, except those which have been already leased. The development of ferro-manganese will be given priority and the exploitation of the deposits of manganese in the Koraput district (South Orissa) and of the high-grade chrome ores in the Keonjaar district (Eastern Orissa) will also be undertaken by the new corporation.

Australian Manganese and Chromite Exports to U.S. Urged.—Australia should export manganese and chromite to the U.S. in exchange for urgently needed tinplate, and the ban on the export of these minerals should be lifted immediately, according to a statement in the House of Representatives by a Liberal M.P., Mr. W. L. Grayden, states Reuter's correspondent in Canberra. Australian industry faced disaster unless tinplate supplies were restored, he said.

Meanwhile, in Perth, mining circles expect that the Federal Government's survey of the chromite deposits at Coobina, between Meekatharra and Nullagine, now under way, would be followed by drilling to prove their extent. The Federal Government has stipulated that at least one million tons of chromite ore must be proved before exports can be permitted.

Mining Men and Matters

Sir Alfred Beit has been appointed a director of Tanganyika Concessions.

Mr. R. P. Brodie has taken up an appointment with the Colonial Development Corporation in Tanganyika.

Mr. F. A. Campbell has joined the staff of Anglo-Westralian Mining Pty. as field engineer, in charge of the exploration of the Northampton alluvial field, Western Australia.

Mr. W. M. Clark has been appointed a director of both Brakpan Mines and Springs Mines.

Mr. H. N. Lightbody has taken up an appointment as mine manager with the Colonial Development Corporation in Tanganyika.

Mr. G. B. Mackenzie has resigned from the Sierra Leone Development Co.

General Sir Pierre van Ryneveld and **Major General Sir Francis de Guingand** have been elected directors of Southern Van Ryn Reef Gold Mining, and **Major General H. S. Wakefield** has resigned from the board.

British Association to Meet in Edinburgh.—The 113th meeting of the British Association will open in Edinburgh on the evening of August 8, under the presidency of the Duke of Edinburgh. The occasion will be marked by the first public demonstration in Britain of large screen television, using a radio link. An audience in the Usher Hall will view on a screen measuring 16 ft. by 12 ft. the opening ceremony in the M'Ewan Hall. Physiological problems of mining will be discussed on the following day. Dr. R. Passmore, Senior Lecturer in Industrial Physiology, Edinburgh University, will deal with "The debt of physiologists and miners to J. S. Haldane." Other papers will be contributed by Dr. C. G. Gooding, Principal Medical Officer, Scottish Division, National Coal Board, on "The effect of lighting on the health and working efficiency of miners"; Dr. C. M. Fletcher, Director, Pneumoconiosis Research Unit, Llandough Hospital, on "The effects of dust inhalation on the working capacity of miners"; Dr. A. Meiklejohn, Lecturer in Industrial Health, Glasgow University, on "Coalminers' pneumoconiosis: employment problems of the disabled"; and Sir Andrew Bryan, H.M. Chief Inspector of Mines, on "Accidents in mines." An excursion will be made in the afternoon to Comrie Colliery, Fife.

Speakers on mining questions in other sections will include: Miss H. Heughan, Lecturer in the Department of Political Economy, Edinburgh University, on "Problems arising from the closing of pits at Shotts, Lanarkshire, and the migration of miners and their families to new areas"; Dr. M. Macgregor, Divisional Geologist, National Coal Board, on "The coalfields of the Lower Forth"; Mr. T. H. Whitehead, Assistant Director (Scotland), Geological Survey, on "The mineral resources of Scotland"; Dr. F. D. Richardson, Head, Nuffield Research Group in Extraction Metallurgy, Imperial College, on "The chemistry of metal extraction"; and Dr. A. Alan Taylor, Fuel Technologist, British Electricity Authority, on "The use of high-ash coals in the electricity supply industry."

Business Items

Mr. L. A. C. Bartlett and **Mr. W. A. H. May** have been appointed to the Board of George Kent Ltd., London and Luton.

Mr. Anthony Charles Barnes, deputy chairman of Barclays Bank (D.C. & O.), has been elected vice-chairman of the Board of Barclays Bank.

Mr. R. G. Dyson and **Mr. J. Rodway** have been appointed assistant general managers of Barclays Bank (D.C. & O.).

Mr. F. J. K. Hull has resigned from the board of the Butterley Co.

Mr. F. J. Stephens has been appointed a managing director of the Anglo-Saxon Petroleum Co., of the Shell Petroleum Co. and a Delegate Member of the board of N.V. de Bataafsche Petroleum Maatschappij, The Hague, which are the three principal operating companies of the Royal Dutch/Shell group.

The Brush Abco Group of Companies have announced the following new appointments: Mr. John Ayres has been appointed general manager (local) of Pettors Ltd. at Staines; Mr. C. F. Barnard has been appointed assistant general manager of the National Gas & Oil Engine Co., Ashton-under-Lyne; Mr. E. J. Batchelor has been appointed vice-chairman of Brush Coachworks; Mr. K. N. Eckhard has been appointed director and general manager of Brush Bagnall Traction; Mr. B. D. Giordan has been appointed general manager of Mirlees Bickerton & Day.

KADUNA PROSPECTORS, LTD.

The Thirty-Sixth Ordinary General Meeting of Kaduna Prospectors, Ltd., was held on July 13, in London.

Sir Godfrey Fell, K.C.I.E., C.S.I., O.B.E. (Chairman) presided.

The following is an extract from the Chairman's review for the year 1950:

The output of tin concentrates of shipping grade during 1950 amounted to 84 tons, the same as for the preceding year.

Prospecting was continued during the year. No large deposits were discovered but workable blocks of ground amounting to 82 tons were added to the reserves. Over the year there was a net increase in reserves of 36 tons.

During the first half of 1950 the world price of metal was fairly steady at around £600 per ton, but in the second six months the price rose until by the end of the year it had approximately doubled. It should, however, be borne in mind that mining companies do not receive these prices for their ore, as the figure at which their product is realized is based on the metal content of the ore shipped, which in the case of this Company averaged during the year 73.955 per cent by weight.

I have referred briefly at the last two annual general meetings to the examination, at first by aerial survey, of a part of the valley of the Niger river, followed by a personal visit by a geologist. During the latter part of the year a highly-qualified geologist, Dr. J. R. F. Joyce, Ph.D., A.I.M.M., F.G.S., made a geological survey of the area. He submitted a detailed report, in the light of which it has been decided to continue prospecting in those parts of the area where he advises that there is the greatest likelihood of finding paying deposits of gold. The work now being done should enable the Directors shortly to come to a final decision as to the prospects of the area, and shareholders will be informed of their decision as soon as practicable.

The output for the first five months of 1951 was 23 tons, compared with 33½ tons during the corresponding period of 1950. The reduction was due in part to an unusual shortage of water and to that extent may be only temporary. Another cause is the working of lower grade ground, which would not have been profitable with the lower level of prices for the metal that obtained until recently.

The report and accounts were adopted.

KADUNA SYNDICATE, LTD.

The Fortieth Ordinary General Meeting of the Kaduna Syndicate, Ltd., was held on July 13, in London.

Sir Godfrey Fell, K.C.I.E., C.S.I., O.B.E. (Chairman) presided.

The following is an extract from the Chairman's Review for the year 1950:

The output of tin concentrates of shipping grade during 1950 amounted to 317 tons, as compared with 368 tons during 1949. The reduction was again due in part to the curtailment of working hours of African labour from 48 to 44 per week, which affected the whole of the year under review, but only the latter half of 1949. One hundred and seventy tons of concentrates were obtained by working deposits included in the reserves at 31st December, 1949, and the balance of 147 tons came from outside those reserves.

Reserves of ore at the close of the year amounted to 1,167 tons measured and 154 tons indicated, a total of 1,321 tons. At the beginning of the year, estimated ore reserves were 1,429 tons.

I have referred briefly at the last two annual general meetings to the examination, at first by aerial survey, of a part of the valley of the Niger river, followed by a personal visit by a geologist. During the latter part of the year a highly-qualified geologist, Dr. J. R. F. Joyce, Ph.D., A.I.M.M., F.G.S., made a geological survey of the area. He submitted a detailed report, in the light of which it has been decided to continue prospecting in those parts of the area where he advises that there is the greatest likelihood of finding paying deposits of gold. The work now being done should enable the Directors shortly to come to a final decision as to the prospects of the area, and the shareholders will be informed of their decision as soon as practicable.

Shareholders will no doubt wish to learn how the Company is faring during the current financial year. The output for the first five months of 1951 was 106 tons, compared with 136 tons during the corresponding period of 1950. The reduction was in part due to an unusual shortage of water, and to that extent may be only temporary. Another cause is the working of lower grade ground which would not have been profitable with the lower level of prices for the metal that obtained until recently.

The report and accounts were adopted.

For Sale...

250,000—300,000 tons TAILINGS

containing between 6-12% Pb. 1-3% Zn. 1-3% S.

Proprietors of the above would consider either outright sale or some combination with a mining or smelting house for the concentration and smelting of this material.

Interested parties please write to:

Box No. 508, THE MINING JOURNAL

15 GEORGE ST., MANSION HOUSE, LONDON, E.C.4

GOLD MINE. Wanted Graduate Surveyor Sampler and Learner Mine Official also Cyanide Plant Learner for Gold Mine in Tanganyika. Young Mining Engineers with some experience abroad considered. Apply giving particulars of age, experience, references, etc., to E. G. Greener, 7 Birch Lane, London, E.C.3.

DIAMOND DRILLER required for service in West African Gold Mines. Setting experience preferable but not essential. 12-15 months tours with three months leave on full pay after each tour. Free quarters and passages provided. Write giving age and full particulars of experience to Box 8293, Whites, 72/78, Fleet Street, London, E.C.4.

INVESTIGATIONS & MANAGEMENT LTD.,
Technical Consultants to
**THE NANWA GOLD MINES LTD, SILVERMINES
LEAD & ZINC CO., LTD.**
and other mining companies, are continually requiring mining staff of all grades. Apply to Secretary, Finsbury House, Blomfield Street, London, E.C.2, giving record of service, references, etc.

DIVIDENDS

Anglo American Corp. of South Africa 3% (Aug. 8)
Anglo-American Investment Trust 20% (Aug. 8)
Attcock Oil 12½%
Bisichi Tin 7½d.
Brakpan Mines 20% (Aug. 8)
Consolidated Tin Smelters 2s. 6d. (Sept. 15)
Crown Mines 3s. 6.03d. (Aug. 9)
Daggafontein Mines 60% (Aug. 8)
Durban Roodepoort 1s. 7.11d. (Aug. 9)
East Daggafontein Mines 13½% (Aug. 8)
East Rand Prop. 1s. 7.11d. (Aug. 9)
Indian Copper 12½%
Modder East 1s. 10.93d. (Aug. 9)
New Era Consolidated 10% (Aug. 8)
Rahman Hydraulic Tin 20% i (Aug. 2)
Rand Mines 2s. 3.2046d. (Aug. 9)
Robinson Deep "B" 7.64d. (Aug. 9)
Rose Deep 1s. 9.017d. (Aug. 9)
Simmer & Jack 2.11d. (Aug. 9)
Springs Mines 7½% (Aug. 8)
Sub Nigel 3s. 4.124d. (Aug. 9)
Sungei Kinta tin 15% (Aug. 9)
Transvaal Gold M. Estates 6.7d. (Aug. 9)
Western Reefs Exploration 25% (Aug. 8)
West Rand Investment Trust 6½% (Aug. 8)
Westminster Bank 9% i; Stock i 6½% (Aug. 1)
i interim * Tax free

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED GROUP

DIVIDENDS ON STOCK AND SHARES TO BEARER

With reference to the notice of declaration of dividends published in the Press on June 22, 1951, the following information is published for the guidance of holders of stock and share warrants to bearer.

The undermentioned dividends will be paid in British currency at par on or after August 9, 1951, against surrender of the appropriate coupons at Barclays Bank (Dominion, Colonial & Overseas), Circus Place, London Wall, London, E.C.2, or at the equivalent in French currency at Banque de l'Union Parisienne, 6 and 8, Boulevard Haussmann, Paris, 9e. Listing Forms may be obtained on application at the offices of either of these paying agents.

Coupons presented for payment at Barclays Bank (Dominion, Colonial & Overseas) will, unless accompanied by Inland Revenue declarations, be paid at the amounts shown in Column No. 12, which are arrived at after deduction of United Kingdom Income Tax (Column 11) at rates reduced to allow for relief in respect of Dominion Taxes. Coupons must be left four clear days for examination and may be presented any day (Saturday excepted) between the hours of 11 a.m. and 2 p.m.

NAME OF COMPANY (Each incorporated in the Union of South Africa)	Class of Capital	Divi- dend No.	Cou- pon No.	Amount of dividend declared per £1 Stock or per Share	South African non-resident Share- holders' tax de- ducted per £1 Stock or per Share	Amount of dividend after deduction of S.A. non-resident Shareholders' tax per £1 Stock or per Share	Rate of relief author- ized in the £	GROSS Amount of Dividend for United Kingdom tax purposes	Rate of deduction of United Kingdom Income Tax in the £	Amount of United Kingdom Income Tax deducted per £1 Stock or per Share	NET amount of dividend per £1 Stock or per Share
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				s. d.	Pence	s. d.	s. d.	s. d.	s. d.	Pence	s. d.
Anglo American Corporation of South Africa Ltd.	6% Cum. Pfd. Stock	44	44	0 7 2	0.4968	0 6 7032	1 4 56	0 7 2	8 1 44	2.9232	0 3 78
Brakpan Mines Ltd.	Shares	77	77	1 0 0	0.9	0 11 1	4 9	1 2 56	4 9	3 46	0 7 64
Daggafontein Mines Ltd. ...	Shares	37	37	3 0 0	2.7	2 9 3	4 9	3 7 67	4 9	10.37	1 10.37
The South African Land & Ex- ploration Co. Ltd.	Shares	26	26	2 0 0	1.8	1 10 2	4 9	2 5 11	4 9	6.91	1 3 29
Springs Mines Ltd.	Shares	59	59	0 4 5	0.3375	0 4 1625	1 6	0 4 5	8 0	1.8	0 2 3625

For and on behalf of ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED.

R. V. PRITCHARD, Assistant London Secretary.

11, Old Jewry, London, E.C.2. July 17, 1951.

The following notes are added at the request of The Commissioners of Inland Revenue:

- As regards the dividends payable by Brakpan Mines Ltd., Daggafontein Mines Ltd., and The South African Land & Exploration Co. Ltd., under the provisions of Section 36 and the Sixth Schedule of the Finance Act, 1950, relating to "unilateral relief" from double taxation, South African tax applicable to the dividend is allowable as a credit against the United Kingdom tax payable in respect of the dividend. The deduction of tax at the reduced rate instead of at the standard rate of 4s. 9d. in the £ instead of at the standard rate of 9s. 6d. in the £ represents a *provisional* allowance of credit at the rate of 4s. 9d. in the £. The final rate of credit allowable to a particular shareholder depends on his personal rate of tax; it may be more or less than 4s. 9d. in the £ but must not exceed three-quarters of the personal rate. Revision of the credit involves a corresponding adjustment of the amount shown above as the GROSS amount of the dividend for United Kingdom tax purposes.
- As regards the dividends payable by Anglo American Corporation of South Africa Ltd. and Springs Mines Ltd. under the provisions of Section 36 and the Sixth Schedule of the Finance Act, 1950, relating to "unilateral relief" from double taxation, South African tax applicable to the dividend is allowable as a credit against the United Kingdom tax payable in respect of the dividend. The deduction of tax at the reduced rate instead of at the standard rate represents a *provisional* allowance of credit in respect of South African Non-Resident Shareholders' Tax. The final rate of credit allowable to a particular shareholder depends on his personal rate of tax; it may be less than the rates shown in the above table as it must not exceed three-quarters of the personal rate. Revision of the credit involves a corresponding adjustment of the amount shown above as the GROSS amount of the dividend for United Kingdom tax purposes.

Metal and Mineral Trades

THE BRITISH METAL CORPORATION LIMITED

HEAD OFFICE
PRINCES HOUSE, 93 GRESHAM STREET, LONDON, E.C.2
Tel. Monarch 8055

AND AT
17 SUMMER ROW, BIRMINGHAM
Tel. Central 6441
47 WIND STREET, SWANSEA
Tel. Swansea 3166

OVERSEAS ASSOCIATES

THE BRITISH METAL CORPORATION
(AUSTRALIA) PTY., LIMITED
SYDNEY, PERTH AND MELBOURNE

THE BRITISH METAL CORPORATION
(CANADA) LIMITED
MONTREAL

DREW, BROWN LIMITED,
MONTREAL

THE BRITISH METAL CORPORATION
(INDIA) LIMITED,
CALCUTTA AND BOMBAY

THE BRITISH METAL CORPORATION
(SOUTH AFRICA) (PROPRIETARY) LTD.
JOHANNESBURG

C. TENNANT, SONS AND CO.,
OF NEW YORK,
NEW YORK

THE COMMERCIAL METAL COMPANY LTD

66 GRESHAM STREET, LONDON, E.C.2

ORES, METALS (Ferrous and Non-Ferrous), METAL ALLOYS, etc.

Telephone : MONARCH 0211 (8 lines)

(Members of the London Metal Exchange)

Cables COMETALCO LONDON

For Optimum Hardness and Strength

NITRIDED NITRALLOY STEEL

Particulars from:

NITRALLOY LIMITED

25 TAPTONVILLE ROAD, SHEFFIELD, 10

Telephone : 60689 Sheffield

Telegrams : Nitralloy, Sheffield

EASTERN SMELTING CO. LTD.

CAPITAL—AUTHORISED £500,000: £435,000 ISSUED

Head Office : **PRINCES HOUSE, 95 GRESHAM STREET, LONDON, E.C.2**

Telephone: MONarch 7661/3

Telegrams: TIMAMASA, PHONE LONDON

TIN SMELTERS

BRANCHES THROUGHOUT THE MALAY STATES

Sole Selling Agents : **VIVIAN, YOUNGER & BOND, LIMITED, 8 BASINGHALL STREET, LONDON, E.C.2**

Telephone : MONarch 7221/7

THE BRITISH TIN SMELTING COMPANY LIMITED

English Refined Tin

"HAWTHORNE" Brand

General Agents

W. E. MOULSDALE & CO., LTD.

2 CHANTREY HOUSE, ECCLESTON STREET, LONDON, S.W.1

THE STRAITS TRADING Co. Ltd. SINGAPORE

Straits Refined Tin

"Straits Trading Co. Ltd." BRAND

Correspondents in U.K.

W. E. MOULSDALE & CO., LTD.

CHANTREY HOUSE, ECCLESTON STREET, LONDON, S.W.1

EVERITT & Co. Ltd.

Teleg. Address: Persistent, Liverpool

40 CHAPEL STREET
LIVERPOOL

Phone: 2995 Central

SPECIALITY:

MANGANESE PEROXIDE ORES

We are buyers of:

WOLFRAM, SCHEELITE, VANADIUM,
MOLYBDENITE, ILMENITE, RUTILE,
ZIRCONIUM and TANTALITE ORES

Suppliers of:

FERRO-ALLOYS & METALS, NON-FERROUS ALLOYS

GEORGE T. HOLLOWAY Co. Ltd.

Metallurgists & Assayers

ORE TESTING, WORKS AND METALLURGICAL
RESEARCH LABORATORIES

**Atlas Road, Victoria Road, Acton,
LONDON, N.W.10**

Telephone:
ELGAR 5202

Grams and Cables:
NEOLITHIC LONDON

NORDISCHES ERZKONTOR G.M.B.H.

Beckergrube 38,
LUEBECK (Germany)
Telephones: 2 59 81
Cables: Erzkontor

Postschliessfach 41,
LUENEN/LIPPE (Germany)
Telephones: 28 54
Cables: Erzkontor

Sellers of

HUETTENWERK KAYSER LUENEN G.M.B.H.
PRODUCTS

ORES-METALS-METAL-ALLOYS SCRAP METALS-RESIDUES

LEONARD COHEN LTD. 1 HAY HILL, LONDON, W.1

GOLD, SILVER and the PLATINUM METALS
ORES, CONCENTRATES and RESIDUES
METAL HARDENERS and NON FERROUS
ALLOYS

Telephone:
GROSVENOR 6284

Works:
PORTH, GLAM.
New York Representatives

Telegrams:
CUPRIFUM, LONDON

EUROPEAN METAL CORPORATION, 424 Madison Avenue, New York 17

ROURA & FORGAS, LTD.

Telephone Nos:
HOLBORN 0517-9

Sole Sterling Area Suppliers of

ITALIAN QUICKSILVER

HANOVER HOUSE,

73-78, HIGH HOLBORN, LONDON, W.C.1

International Smelters and Buyers of

SCRAP METALS AND RESIDUES

• SLAG
• SKIMMINGS
• DROSSES
• SWEEPINGS
• ASHES
• BY-PRODUCTS

INTERNATIONAL SMELTERS LTD

Christchurch Road, London, S.W.19

Phone: Mitcham 2181

Wire: Infasmelte, Phone, London.

WOLFRAM ORE TIN ORE

FELIX KRAMARSKY CORPORATION
39 BROADWAY
NEW YORK 6, N. Y.

Telephone:
Whitehall 3-4062

Cable Address:
Orewolfarm

ENTORES, LIMITED

KINGS HOUSE, 36 & 37 KING STREET,
LONDON, E.C.2

NON-FERROUS METALS ORES · RESIDUES

Telegrams:
Entores, Phone, London

Telephone:
MONarch 3415

MAYBANK METALS LTD.

This new Company backed with the vast experience gained in a 100 YEARS of progressive trading, will expedite all orders...

THE BUYING OF MIXED OR SORTED NON-FERROUS SCRAP METALS and Supplying of Finely Graded Non-Ferrous Scrap to Your Requirements.

MAYBANK METALS LTD.

STAR WORKS, SPURGEON STREET, SOUTHWARK
LONDON, S.E.1 Telephone: HOP 2432/3
HOP 4212/4

ROKKER & STANTON LTD.

DRAYTON HOUSE, GORDON STREET
LONDON, W.C.1

Metal Stockists & Shippers
for

BRASS, COPPER, ALUMINIUM
AND NICKEL SILVER

in

Sheets, Rods, Tubes, Strip, Wire, etc.

Associated Companies in Holland and Belgium;
also Regd. in South Africa and Rhodesia.

Tel: EUS 4751/2 Cables: BENTLY 2nd; A.B.C.6
Grams: ROKKER, WESTCENT, LONDON

ZINC SHAVINGS GRANULATED & POWDERED NON-FERROUS METALS

"Lead Wool" for Pipe-jointing.
Metallic Packing for Pumps, etc.

THE LEAD WOOL CO., LTD.
SNODLAND KENT

Telephone: Snodland 84216 & 7 Telegrams: "Strength, Phone, Snodland"

PLATT METALS LTD.

METAL MANUFACTURERS and MERCHANTS

BUYERS BRASS ROD SWARF AND SCRAP, and
OF all descriptions of NON-FERROUS SCRAP
METALS, BORINGS AND RESIDUES.

SELLERS BILLETS AND INGOTS TO ANY REQUIRED
OF COMPOSITION
GRADED NON-FERROUS SCRAP METALS

METALEX WORKS, Great Cambridge Road
ENFIELD, Mddx.

Telephone: ENField 3425 (5 lines) Telegrams: Walton, Enfield

E. M. JACOB & CO. LTD.

International Importers of all:

NON-FERROUS ORES, MINERALS,
RESIDUES, MATTES, SLAGS,
BY-PRODUCTS, SCRAP METALS

★

79 Bishopsgate, London, E.C.2

Phone: LONDON WALL 9341/3 Grams: "JACOMETA, LONDON"

MINING & CHEMICAL PRODUCTS, LTD.

MANFIELD HOUSE, 376, STRAND, W.C.2

Telephone: Temple Bar 6511/3 Works: ALPERTON,
Telegrams: "MINCHEPRO, LONDON" WEMBLEY, MIDDLESEX

Buyers of Silver Ores and Concentrates

Smelters and Refiners of

BISMUTH

ORES, RESIDUES & METAL

Manufacturers of:

FUSIBLE ALLOYS, SOLDER, WHITE METALS,
ANODES OF TIN, CADMIUM and ZINC IN
ALL SHAPES

Importers and Distributors of:

ARSENIC · BISMUTH · CADMIUM
CAESIUM SALTS · INDIUM · SELENIUM
TELLURIUM · THALLIUM

H. BARNETT LTD.

VICTOR ROAD, LONDON, N.7.
IMPORT : EXPORT
 Phone: ARCHWAY 5461 (5 lines) Established 1 65
**WE SPECIALISE IN ALL NON-FERROUS
 SCRAP AND INGOT METALS**

CONSULTING METALLURGISTS

A.I.D. & A.R.B. Approved for
 MECHANICAL TESTING
 METALLURGICAL ANALYSIS
ACLOQUE & Co.
 26 Bloomsbury Way, London, W.C.1 HOLborn 4487

HENEAGE METALS

for Quality Ingots

IN BRASS, GUN METAL
 & PHOSPHOR BRONZE.

PHONE ASTON CROSS 1177/8

HENEAGE METALS LTD. HENEAGE ST. BIRMINGHAM

DEERING PRODUCTS LTD.

8 GREAT SMITH STREET, LONDON, S.W.1

**ORES - MINERALS - REFRACTORY
 RAW MATERIALS**

Telephone: ABBEY 2681/2

Cables: PRODEERING. LONDON

The Mining Journal
1951
ANNUAL REVIEW
NUMBER

Summarizes events and statistics
 of 1950

Is now on Sale

- Orders for copies should be placed direct, or through Newsagents.
 5s. 0d. post free.

Write: The Publisher, Mining Journal,
 15 George Street, London, E.C.4

Established 1912.

Cables: "Hostombe"

Buyers of

CORUNDUM AND GARNET

R. HOSTOMBE LTD.

2, REGENT STREET · SHEFFIELD · ENGLAND

ELTON, LEVY & CO. LTD.
METALS

ORES — TAILINGS — DUMPS — RESIDUES — SCRAP

1/4 ST. ERMIN'S (WEST SIDE), CAXTON STREET,
 LONDON, S.W.1

Telephone: WHITEhall 9621/2/3 Telegrams: Eppanleco, Sowest, London

LEAD

**H. J. ENTHOVEN
 & SONS, LTD.**

Smelters and Refiners

- **ANTIMONIAL LEAD**
 for the Battery Trade
- **LEAD ALLOYS**
 for the Cable Trade
- **PRINTING METALS** ● **SOLDERS**

City Office: 89 Upper Thames St., London, E.C.4.

Telephone: Mansion House 4533. Telegrams: Enthoven, Phone, London
 Works: Rotherhithe, Croydon & Derbyshire

Telephone: AMHERST 2211 (six lines)

E. AUSTIN & SONS

(London) LIMITED

ATLAS WHARF
Hackney Wick, London, E.9

Are Buyers of

NON-FERROUS METALS
COPPER · SCRAP BRASS
GUNMETAL · ALUMINIUM

Manufacturers of

**INGOT-BRASS · GUNMETAL &
 COPPER ALLOY · INGOT-LEAD
 TYPE METAL · ZINC · Etc.**

"I SAVE POUNDS A YEAR . . ."
says the Transport Manager

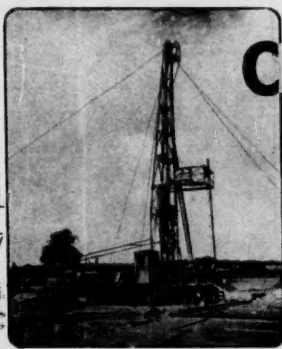


"With Stream-Line Filters, lubricating oil for my vehicles can be used over and over again. The result: lower charges for maintenance; longer periods between overhauls." 30,000 other users have also proved it!



STREAM-LINE FILTERS LTD

INGATE PLACE
LONDON S.W.8
TELEPHONE
MACAULAY 1011



CORE DRILLING FOR COAL PROSPECTING

Illustrated is one of our Portable Mineral Drilling Units part of the modern equipment we have available for your every need, together with highly skilled personnel and 100 years experience.

WATER SUPPLIES
JOHN THOM Ltd
 CANAL WORKS PATRICROFT MANCHESTER

Telephone: ECCLES 2261/2/3

Telegrams: THOM, PATRICROFT

HUWOOD

Head Office & Factories:

HUGH WOOD & CO. LTD., GATESHEAD - ON - TYNE II.

Industrial & Export Office:

DASHWOOD HOUSE, 69, OLD BROAD STREET, LONDON, E.C.2.

TELEPHONE: LONDON WALL 6631-2-3

TELEGRAMS: HUWOOD, AVE. LONDON.

*Conveyors
for
every
output.*